Tanintharyi Regional Oil Palm Assessment:

Macro-level overview of land use in the oil palm sector

OneMap Myanmar

December 2020

Glenn Hunt and Patrick Oswald

Centre for Development and Environment
University of Bern, Switzerland

UNIVERSITÄT BERN
CDE CENTRE FOR DEVELOPMENT AND ENVIRONMENT

Land Core Group

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

Published by: Centre for Development and Environment (CDE), University of Bern, with Bern Open Publishing.

© The authors, 2020

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) Licence. See http://creativecommons.org/licenses/by-nc/4.0/ to view a copy of the licence. The publisher and the authors encourage the use, reproduction and dissemination of material in this information product. Contents may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that the original authors and source are properly acknowledged and cited and that the original authors' endorsement of users' views, products or services is not implied in any way. Permission for commercial use of any contents must be obtained from the original authors of the relevant contents.

Disclaimer: The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the publishers or the Government of Myanmar concerning the legal or development status of any country, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by the institutions mentioned in preference to others of a similar nature that are not mentioned.

The views, opinions and interpretations expressed in this publication are those of the authors and contributors. They should not be interpreted as representing the official or unofficial views or positions of Swiss Agency for Development and Cooperation, Centre for Development and Environment or the Government of Myanmar.

All reasonable precautions have been taken by OneMap Myanmar and the Centre for Development and Environment to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall OneMap Myanmar or the Centre for Development and Environment be liable for damages arising from its use.

Funding: Swiss Agency for Development and Cooperation (SDC)

Citation: Hunt, G., Oswald, P. 2020. *Tanintharyi regional oil palm assessment: Macro-level overview of land use in the oil palm sector*. Bern, Switzerland: Centre for Development and Environment (CDE), University of Bern, with Bern Open Publishing (BOP).

DOI: 10.7892/boris.151116
ISBN (e-print): 978-3-03917-020-3
ISBN (print): 978-3-03917-021-0

Cover photos: Patrick Oswald

Data collection: Members of the research team listed on page 15.

Proofreading: Jessie Goldie

Layout and Design: Katherine Gibney

Printing: Inspiral Creative, Yangon, Myanmar

Reviewers: U Shwe Thein, Henri Rueff, Sonia Leonard, Vicky Bowman, Jack Jenkins-Hill

Contact: Centre for Development and Environment (CDE), University of Bern

In Myanmar
E-2 New University Ave Housing
New University Ave.
Bahan, 11201 Yangon

In Switzerland
Mittelstrasse 43
CH-3012 Bern

www.cde.unibe.ch
Email: publications.cde@unibe.ch

Tanintharyi Regional Oil Palm Assessment:

Macro-level overview of land use in the oil palm sector

OneMap Myanmar

December 2020

Glenn Hunt and Patrick Oswald

Centre for Development and Environment
University of Bern, Switzerland

Acknowledgments

This report and the assessment that it documents has been undertaken by the Centre for Development and Environment (CDE) as part of the OneMap Myanmar project, with funding from the Swiss Agency for Development and Cooperation at the Embassy of Switzerland in Myanmar. The authors would like to thank the Regional Government of Tanintharyi for their commitment and cooperation that was so essential to the task of gathering permits and plantings data for this assessment. In particular the Forest Department and Department of Agriculture and Land Management Statistics who gave their time to provide both official documentation and verbal advice on the status of oil palm plantations and associated permits across Tanintharyi Region. Additionally, the assessment team would like to express our thanks to the oil palm plantation operators who cooperated with plantation sketch mapping process and freely supplied permit maps and other documentation for the assessment.

The assessment team would like to also express our sincere gratitude to the numerous civil society organisations and village representatives of Tanintharyi Region, whose valuable insights and critical review have greatly contributed to the assessment team's understanding. In particular, the various challenges faced by communities surrounding oil palm plantations.

Finally, the authors would like to thank the various people who gave their time to review and provide comments on this report at different stages of its development, particularly, U Shwe Thein, Jack Jenkins-Hill, Vicky Bowman, Inga Makusheva, Hnin Wut Yee, Sonia Leonard, Henri Rueff. Thanks also to Ben Hardman for his insights into the intricacies of the law related to land and agribusiness investments, and particularly to Jessie Goldie whose numerous proof readings and suggestions across the full timeline of this report have greatly enhanced the quality of this final document.

About OneMap Myanmar

The OneMap Myanmar Project is developed by the Government of Myanmar with the purpose of improving the availability and quality of, as well as the access to, accurate spatial data on land and other select socio-economic sectors. Through this project, every government agency, as well as the public will be able to access various spatial data sets, that until now have only been available internally within respective departments. The project will work with respective departments to improve and standardise spatial data, and conduct analysis of select data that can contribute to policy discussion and development.

Project activities are undertaken across 3 main pillars

- **Providing access to consolidated data on people**, land and natural resources through, for example, platforms with geospatial datasets that allow interactive mapping.
- **Strengthening capacities of government**, civil society and other stakeholders in the creation, use and management of geospatial data through, for example, pilot projects and trainings.
- **Generating knowledge and enabling multi-stakeholder dialogues**, through research and data analysis that can inform decisions on key development challenges, for example, in research reports, or map-based applications.

Table of contents

Contents

List of tables

List of acronyms and abbreviations

ALARM	Advancing Life And Regenerating Motherland
DALMS	Department of Agriculture and Land Management Statistics
DICD	Department of Industrial Crop Development
DoA	Department of Agriculture
EIA	Environmental Impact Assessment
FD	Forest Department
FPIC	Free Prior Informed Consent
FSWG	Field Survey Working Group, Yebyu Township
GAD	General Administration Department
Kha	Kilo-hectare or 1,000 hectares
LUC	Land Use Certificate
MAC	Myanmar Auto-Corporation
MIC	Myanmar Investment Commission
MIL	Myanmar Investment Law
MoAI	Ministry of Agriculture and Irrigation (pre 2016)
MoALI	Ministry of Agriculture, Livestock and Irrigation (2016 onwards)
MRPP	Myanmar Royal Prestige Plantation
MSPP	Myanmar Stark Prestige Plantation
NLD	National League for Democracy
NLUP	National Land Use Policy
OMM	OneMap Myanmar
OP	Oil Palm
PFE	Permanent Forest Estate
PPT	Pyae Phyo Tun Co. Ltd.
RSPO	Roundtable on Sustainable Palm Oil
SIA	Social Impact Assessment
SPDC	State Peace and Development Council
TLC	Technical Leading Committee
USDP	Union Solidarity and Development Party
VFV	Vacant, Fallow and Virgin Land

Glossary

Assessment team	The team of individuals who undertook this study and assessment, namely the staff of Centre for Development and Environment (CDE) Dawei and Yangon offices who are implementing the OneMap Myanmar (OMM) project.
Company sketch map	A technical dataset used in this report that describes an area that plantation operators have claimed as having been planted with oil palm.
Form 7	A form 7 land use certificate is the primary method for farmers to register farmland in order to obtain permanent land use rights.
Land tenure permit	A permit that provides a plantation operation the legal land right to undertake planting of oil palm.
Permit	A government-issued document that gives permission to the recipient to grow plantations.
Permit area	The areas identified in a permit where permission has been given by the relevant government agency to plant oil palm. One permit may contain multiple distinct permit areas.
Permit type	The category of permit issued for oil palm plantations. Some examples of permit types referenced in this report are vacant, fallow and virgin (VFV) land permit and Forest Department contracts.
Plantation operators / Plantation operations	The general term used in this report to identify the 50 different entities identified that are planting oil palm on a large scale (>500ac). These include private companies, individuals, and government entities.
Strong evidence of oil palm	A technical dataset used in this report that describes an area where at least some evidence of oil palm plantings can be identified in the satellite imagery or by other reliable evidence.
Well managed plantation	A technical dataset used in this report to identify areas of oil palm that are managed at a level consistent of what could be expected of a commercially viable plantation.
Viable plantation	A term to describe whether a plantation is running at a level where it is possible to be commercially viable.

Executive summary

This report summarises an assessment that was undertaken at the request of the Tanintharyi Regional Government, in response to concerns raised by civil society and other stakeholders regarding land conflicts in the oil palm sector. It provides a macro-level overview of large-scale (more than 500 acres) oil palm operations across Tanintharyi Region, based on an assessment carried out by the Centre for Development and Environment (CDE) as part of the OneMap Myanmar (OMM) project in 2018-2019.

The assessment aimed to improve transparency regarding the land use relating to oil palm operations in Tanintharyi Region. This was achieved through documenting the total number of oil palm operations, permit areas and planted areas in a report and spatial representation on a digital, online platform. While some findings continue to be updated, most information should be considered relevant as of September 2018.

This report provides the first consolidated overview of the scale of the oil palm sector in Tanintharyi Region. With the mandate from the Tanintharyi Regional Government, this assessment attempted to systematically collect land permits for all oil palm operations in the region. Planting data from plantation operators was then collected, and planting areas were determined based on high-resolution satellite imagery. This allowed the assessment to analyse oil palm plantings across Tanintharyi Region, as presented in this report.

Plantation operations and permits

A key objective of this assessment was to determine the total area of land under oil palm permits. The assessment ran a systematic process to identify all current plantation operations and locate all scan permits relating to each plantation, and store in a digital database.

Main findings

- Fifty distinct oil palm operations were identified in Tanintharyi Region.
- Six per cent of the total mainland area of Tanintharyi Region was under permit for oil palm plantations. More than 100 valid oil palm plantation permits were identified, covering 184 permit areas and 556,432 acres of land.
- The majority of permits (103 permit areas) were issued during the military era of government before the Union Solidarity Development Party (USDP) came to power in 2010.
- Only one of the old Tayaka permits (previously issued by the Regional Military Commander) was identified, suggesting that older permits have been either cancelled or re-issued.
- Formal notifications of cancellations of oil palm permits were found for approximately 200,000 acres. While the assessment was informed that permit cancellations were higher than this, formal notifications could not be located.
- Four plantation operations, covering total permit area of 189,950 acres, were found to be operating with only Myanmar Investment Commission (MIC) permits, without valid land tenure permits.
- The highest acreage of oil palm permits was found in Bokpyin (250,041 acres), Kawthaung (165,579 acres) and Tanintharyi (125,816 acres) townships. Permits covered a significant

proportion of the total mainland area in each township, particularly in Bokpyin and Kawthaung where permits cover 19% and 21% respectively.

Recommendations

- Increase overall transparency across the agribusiness sector, including in the process of updating permit boundaries, and in the issuance and revocation of permits.
- Introduce standard operating procedures for the amendment or revocation of land permits that support greater transparency, consistency and clarity around the status of each permit, including those that have been cancelled.
- Monitor and regulate the use of MIC permits to ensure they are not used in place of a land tenure permit. Laws governing agribusiness investments should be enforced and violations punishable under the law.
- The Government of Tanintharyi should engage in a transparent and informed multi-stakeholder dialogue about the suitability of the extent of oil palm permits across Tanintharyi.

Challenge to locate and digitise permit information

While strongly supported by the Government of Tanintharyi, this assessment faced considerable challenges around the process of locating oil palm permits. In some cases, official permits could not be located and the best reliable maps, often held by the plantation operators were used as a means of identifying the permit area. After locating permit/plantation maps, the assessment faced further challenges to digitise such maps, due to the rudimentary nature of many permit maps, meaning that permit boundaries identified should only be considered as rough estimates.

Main findings

- Oil palm permits are typically held between two main departments and are commonly kept at the township level, with no centralised database containing every oil palm permits and listing the total permit area, greatly hindering all stakeholders from having an overview of the sector.
- Many permit maps were found to be imprecise and created using out of date and inaccurate one-inch base maps.

Recommendations

- Develop a centrally managed and regularly updated digital database of all permits, that provides an accurate overview of all large-scale agribusiness plantations that is accessible to all relevant stakeholders.
- Update permit boundaries for oil palm plantations in close consultation with local communities and civil society and considering the customary lands of local communities.
- Hold government agencies accountable for providing accurate data on permits and introduce processes to support this.

Determining and analysing planted areas

Once the assessment had digitised permit areas, the next step was to undertake a determination of planted areas for each plantation operation. This was not a simple task due to the lack of existing reliable data, and the condition of many plantations. Once this planted mapping process was completed the planting data could be further analysed using geographic information systems (GIS).

Main findings

- Using high-resolution satellite imagery, 180,000 acres of planted oil palm was identified. An additional, rapid analysis of this planting data found that approximately 156,000 acres could be considered as 'well managed' plantations.
- Plantation operators determined a total planted area of 215,000 acres, in other words the assessment could not confirm the presence of oil palm in up to 17% of areas in plantation operators' maps.
- Seven plantation operators accounted for 85% of all planted oil palm (154,000 acres).
- Significant discrepancies were found between the findings of the assessment and official government data. The Department of Agriculture records a total of 388,496 acres of planted oil palm.
- In plantation operations with more than 30,000 acres total permit area, all but one were found to have planted less than 50% of their total permit area.
- Most oil palm was centred around Bokpyin and Kawthaung townships, where approximately 67,000 acres of oil palm plantings were identified in each township, representing 5% and 13% respectively of the total mainland area of each township.
- Most plantation operations were found to be underperforming in terms of the rate of planting and were not using the extent of their permit areas. While there was variation across townships, only 47% of total permit areas were planted with oil palm.[1]
- Significant areas of oil palm plantings were found outside permit area boundaries. Across Tanintharyi Region, 54,000 acres, or 33%, of total plantings were found to be outside of permit areas.

Recommendations

- Introduce standard operating procedures to accurately measure the total area of plantations, to allow decision-makers and the public to have an accurate overview of the sector.
- Investigate the reasons for various problematic plantation management practices identified in this assessment.
- Implement systems to monitor the plantings of permit holders to ensure they do not plant outside permit boundaries and introduce suitable penalties for violation.
- Hold plantation operators accountable to comply with the management plans provided as part of their permits and consider revoking unplanted areas where they fail to do so.

Deforestation analysis

In many neighbouring countries, large scale industrial tree plantations are responsible for rapid and dramatic deforestation. This assessment has analysed scientific deforestation data from the year 2000 - 2018 against both company sketch mapping of planted areas and satellite imagery. This provided an understanding of how oil palm plantations in Myanmar may be contributing to deforestation in Tanintharyi.

Main findings

- Oil palm plantations may be responsible for the deforestation of between 118,000 and 152,500 acres of intact forest. This estimate is based on a comparison of data collected in this assessment against forest cover data from 2000.

1. This reduced to 32% if plantations operating with only MIC permits areas are counted.

- Oil palm permits were found to put 241,300 acres of intact forest and 23,191 of mangrove at risk of deforestation.

Recommendations

- Ensure that all operations comply with the requirements of the 2012 Environmental Conservation Law, the 2014 Rules, and the 2015 Environmental Impact Assessment Procedures.
- Monitor plantation development to ensure that negative environmental impacts are eliminated.
- Consider revoking permits that overlap with high value conservation areas.

Land conflicts and land use within plantation areas

Land conflicts within the oil palm sector were a key driver of the reasons for this assessment, and there have been numerous reports on conflicts between oil palm operators and local communities across the region, however, it was beyond the scope of this study to undertake a comprehensive assessment of land conflicts across the oil palm sector. In a pilot exercise conducted in the initial stages of this assessment, a comprehensive land use and land conflict assessment was undertaken by a multi-stakeholder group in a 611 acre plantation, with the support of the OneMap Myanmar project. The findings of that survey together, together with anecdotal reports gathered during this assessment and other reports of land conflicts across the oil palm sector inform the following findings and recommendations.

Main findings

- Areas of community land use were found within several plantation areas. When combined with reports of land conflicts between communities and oil palm operators, this suggests that it may not be uncommon for permits to be issued in areas of community land use.
- The plantation permit area mapped by the Field Survey Working Group was found to have crops other than oil palm planted by the plantation owner.
- The current land governance framework does not give sufficient protections to customary tenure holders, forest dependent peoples, and informal land users.
- Customary tenure users lost their traditional lands when land was first acquired for the plantation.

Recommendations

- Implement legal recognition and protection of customary tenure, an urgent need for rural subsistence communities and forest-dependent people to bring current laws in line with the basic principle outlined in the 2016 National Land Use Policy, to "legally recognize and protect legitimate land tenure rights of people…"[2]. In the absence of legal protections, interim measures should be developed to ensure that communities are not negatively impacted by large scale land acquisitions.
- Ensure the collection of baseline data relating to environmental and social impacts, to inform comprehensive environmental impact assessments. Ongoing monitoring should ensure that measures to reduce negative impacts are effective. Research the environmental and social impacts of large-scale agribusiness investments, both concerning biodiversity and ecosystem service provisioning, and community livelihoods.

2. Article 8(a) of the NLUP states that the first basic principle of the National Land Use Policy is to: "To legally recognize and protect legitimate land tenure rights of people, as recognized by the local community, with particular attention to vulnerable groups such as smallholder farmers, the poor, ethnic nationalities and women."

Overall regulatory issues

Given the above findings, this report also makes some broader recommendations around large-scale agribusiness investments in general, particularly as they relate to regulatory oversight.

Main findings

- Overall, the implementation and management of oil palm plantations was found to be overly haphazard and lacking in regulatory oversight, leading to many questions regarding the financial viability of many plantations.
- Loopholes in the VFV law may facilitate large scale agribusiness companies to acquire permanent land use certificates for large areas of land.

Recommendations

- The main recommendation from this assessment is to improve the central management of the oil palm sector. In particular to develop a centrally managed and regularly updated digital database of all permits and plantings, providing an accurate overview of all large-scale oil palm plantations that is accessible to all relevant stakeholders.
- Investigate the economic contribution of large-scale agribusinesses enterprises to national income, particularly related to the creation of government revenue, job creation, land taxes and local development initiatives.
- Draw on the experience of other countries in regulating large-scale agribusiness to inform the development of policies and practices to better protect community livelihoods and the environment.
- Undertake a comprehensive review of the legal and regulatory frameworks governing all aspects of large-scale commercial and state-owned agribusiness investments.

Final recommendation

Finally, given the various ongoing land conflicts reported in Tanintharyi, and the potential doubling or tripling of the area of planted oil palm, a final recommendation is offered to ensure that the government of Tanintharyi has sufficient time to address the recommendations listed above.

Recommendation

- **Establish a moratorium to pause the expansion of oil palm plantations** and provide the opportunity to address various regulatory inadequacies identified in this assessment and the other subsequent assessments listed above. Such a pause would be a trust-building measure with local communities and civil society in Tanintharyi, who have raised concerns regarding various oil palm operations. It will also provide an opportunity for a comprehensive risk assessment and an open dialogue among stakeholders regarding the approach to large-scale oil palm and other agribusiness investments in Tanintharyi Region.

1. Introduction

1.1 Background to assessment

In response to numerous reports of land conflicts between communities and oil palm operators, in 2017 the Tanintharyi Regional Government requested support from CDE as the lead implementing agency of the OneMap Myanmar (OMM) project, to assess the land use pertaining to oil palm plantations in the region. Following this, a Technical Leading Committee (TLC) was established in 2017 under the leadership of the Tanintharyi Regional Government to assess land use relating to plantations and provide recommendations on how to manage ongoing land conflicts around plantations. The TLC included representatives from the Tanintharyi Regional Government, civil society organisations (CSOs), oil palm operators and the Karen National Union (KNU).

The TLC initiated the process with a pilot assessment of the Daw Yi Yi Win 660 acre oil palm plantation in Yebyu Township. The pilot was designed to inform the process of assessing the remaining plantations. Through this process, CDE developed different layers of maps using satellite imaging, drones and government maps of plantation permit areas. After preparing the maps, and with the leadership of TLC, the Field Survey Working Group, Yebyu Township (FSWG) was formed with representatives from government, CSOs, oil palm operators and the KNU representatives from the area. The FSWG conducted a participatory field assessment together with locals from the villages surrounding the plantation. Through this extensive process, a consensus was built regarding the plantation boundaries and current land use within those boundaries. Land tenure issues and related conflicts were also documented. CDE assisted the TLC to document the outputs, activities and methodologies in a report that was later presented in a multi-stakeholder workshop with TLC, government representatives and CSOs. The report included the following recommendations:

- For the responsible government bodies to support farmers who have previously utilised plantation land to obtain land use certificates as per existing laws.
- To return unused plantation land as provided by the 2012 Vacant, Fallow and Virgin (VFV) Lands Management Law, Article 22(c).
- To apply key lessons from the pilot in the oil palm assessment of the Tanintharyi Region, including using a multi-stakeholder working group and participatory ground-truthing for consensus on the conflicting land use and boundaries.

Based on lessons learned from Yebyu pilot, CDE recommended that the regional oil palm assessment be divided into two steps:

Step One: CDE supports an assessment to provide the government with a macro-level overview of land use relating to the oil palm sector in Tanintharyi Region. Such an assessment should make use of satellite imagery, permit maps and information from the permits and government and company records.

Step Two: Undertake ground-truthing[3] of plantation areas based on the macro-level maps, led by the TLC and local multi-stakeholder working groups (to be accomplished by the TLC and Regional Government).

3. Determining the exact location of the plantation boundary on the ground.

This report is the outcome from Step One, above, and provides a macro-level overview of land use relating to the oil palm sector, as well as observations and recommendations for the TLC and Tanintharyi Regional Government. It is hoped that this assessment will inform decision making and stimulate discussion regarding oversight and management of the oil palm sector and large-scale agribusiness in Myanmar.

This report provides an understanding of the broader challenges in returning unused plantation land to farming communities. In particular, how "unused plantation land" should be defined and, therefore, on what basis land should be returned. The report also highlights some of the limitations of relying on remote sensing to understand and determine land use.

Finally, this assessment serves as an example for novel uses of spatial technologies in monitoring and oversight of land use, government permits and plantations. It is hoped this assessment will contribute to positive change in managing land use in Tanintharyi Region and Myanmar more broadly.

1.2 Assessment objectives

The primary objective of this assessment was to provide the Tanintharyi Regional Government and the TLC with a broad understanding of land use patterns and trends in the oil palm sector across the region. Specifically, the assessment sought to understand the following:

- The number of operators managing large-scale (more than 500 acres) oil palm plantations (not including military-owned plantations);
- The total size of the permitted plantation area for each operation;
- The different types and number of permits issued for oil palm plantations and total acreage for each permit type; and,
- The approximate location and acreage of plantings within each plantation.

In addition to delivering a report, the assessment also sought to produce:

- A proof of concept to support the development of an oil palm database that would act as a mechanism to promote transparency and consistent data management; and,
- An easy-to-use online data visualisation platform that could serve as a model for an agribusiness monitoring system that will help to inform decision-makers and the public.

1.3 Assessment scope

This assessment examines land use data relating to all large-scale (more than 500 acres) oil palm plantation operations in Tanintharyi Region as at November 2018. Initially, the aim was to collect data on all oil palm plantations above the size of 124 acres or 50 hectares, as 50 hectares is an international threshold for limits on smallholder plantations of oil palm (RSPO 2019, p.5). However, the rigour of the data on plantations under 500 acres (202 hectares) size was found to be too low. As such, a 500 acre permit area was chosen as the minimum threshold for inclusion in this assessment. Furthermore, this threshold is also applied for the listing of plantation operations and companies in the government's annual report on the status of land acquisitions and plantations in the 2018-19 financial year (Tanintharyi Region Department of Agriculture, 2018).

1.4 Assessment Team

This assessment was carried in various stages by out by the project staff of CDE, under the leadership of the Tanintharyi Field Office, and lead by Patrick Oswald.

- Patrick Oswald (CDE, Regional GIS and Research Coordinator)
- Thun Thun Thein (AGS, field assessment leader)
- Joan Bastide (CDE, Country Representative {former})
- U Aye Ko (CDE/LCG, facilitator & land advisor– previous head of Myeik SLRD/DALMS)
- Hnin Wuit Yee Kyaw (CDE, regional GIS and research officer)
- Paing Phyo (CDE, GIS officer)
- Kyaw Zayar Linn (CDE, GIS officer)
- Aung Myin Tun (AGS, GIS staff)
- Thiha Zaw (CDE, GIS officer)

1.5 Limitations of the assessment

There are several limitations regarding the data collection and analysis that should be considered when reading this report. These limitations are explained throughout the report as relevant and are listed below:

1. It is difficult to accurately demarcate planted areas using remote sensing when there is overgrowth of other types of vegetation.
2. Most available land permit boundaries were unclear or imprecise, as they were based on unreliable documents, low quality maps or incomplete data.
3. It was not possible to visit and/or interview all plantation operators
4. Information regarding cancelled permits was often inconsistent and or lacking in detail.
5. The assessment was conducted under significant time and resource constraints.
6. Official government documentation and data are not standardized, updated or consolidated.
7. Some oil palm operators had inconsistent knowledge of the plantations and/or did not share sufficient documentation.
8. There were challenges accessing reliable data and information on each plantation as well as in finding and contacting appropriate resource persons within each the plantation operation.

2. Oil Palm in Myanmar

Tanintharyi Region is the southern-most region of Myanmar. The 2014 census recorded a total population of just under 1.5 million people with 24% of the population described as urban (Department of Population 2015). The region is also home to numerous ethnic minority populations, the largest of which is the Karen people. Tanintharyi Region, particularly the eastern mountainous side, is considered to be of high conservation value. According to the Conservation Alliance for Tanintharyi (CAT) the region is home to one of the largest remaining intact areas of low-elevation evergreen forest in South East Asia, which supports a high concentration of biodiversity (CAT 2018).

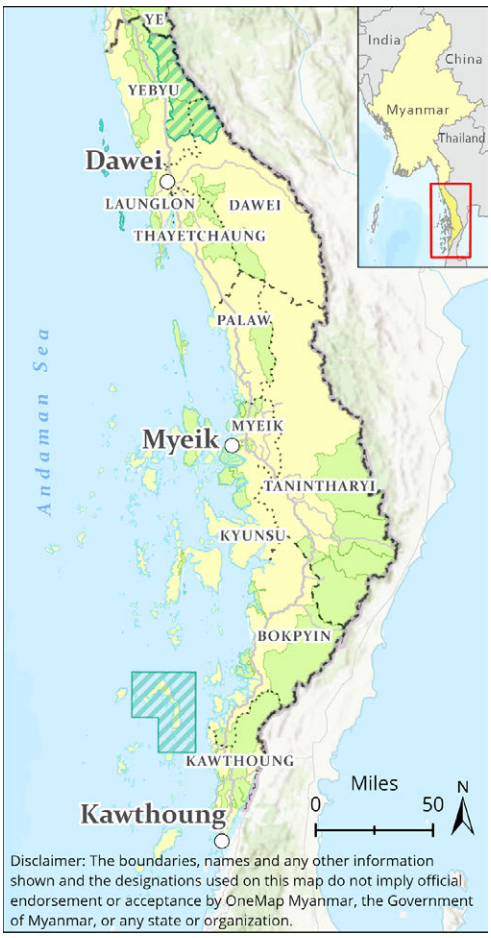


Figure 1:
Tanintharyi Region

Oil palm (*elaeis guineensis*) originates from West Africa and was introduced to South East Asia by European traders in the 19th century. During the 1970s and 80s, the planting of oil palm was promoted by the Myanmar Ministry of Agriculture and Irrigation (MoAI) in both Mon State and Tanintharyi Region. In 1999, the Government of Myanmar promoted oil palm with a view to achieving self-sufficiency in edible oil production. Under this policy, Tanintharyi Region was promoted as the "edible oil palm big pot of the nation" (Woods 2019) and a thirty-year plan to develop 700,000 acres of oil palm by the year 2030 was implemented (Basket 2016).

To achieve this thirty-year plan, large land permits for planting oil palm were granted to private enterprises under the 1991 Wasteland Instructions, which later became the 2012 Vacant, Fallow and Virgin Lands Management Law (the VFV Law). These legal provisions have been criticised for failing to recognise the customary land tenure of local communities (Oberndorf, 2012). This is one of the reasons why the expansion of oil palm across the region has resulted in several land conflicts between oil palm operators and communities who may be using land and natural resources under customary or informal arrangements (see, for example, Dunant et al. 2019; Lundsgard-Hansen et al. 2018; ALARM et.al. 2018).

In addition to numerous reports of land conflicts, commentators have identified the oil palm sector as a leading cause of deforestation in southern Tanintharyi (Woods, 2015; Baskett, 2016; ALARM et.al. 2018; Tarkapaw et.al. 2017). For example, a recent report by local NGO Advancing Life and Regenerating Motherland (ALARM) draws on community sources to show that over 13,000 acres

of intact forest were cleared for a single plantation operation. Similarly, Dr Woods (2015), writing for Forest Trends, states that 70,000 acres of forest were cleared for oil palm plantations in 2010-2011 alone, based on official government data.

While oil palm plantations have proliferated across Tanintharyi Region, there is inconsistency in the literature regarding the extent of both permitted areas and planting rates. Dr Woods, who has written extensively on the oil palm sector in Tanintharyi, cites regional MoAI data for the 2012-13 fiscal year recording that almost 1.9 million acres of oil palm permits had been granted across Tanintharyi Region by the end of 2013 (Woods 2015, p. 31). However, this number conflicts with a 2016 report from international NGO, Flora and Fauna International (FFI), which cites data from the Department of Industrial Crop Development that reports that oil palm permits were issued for a total of 992,902 acres in Tanintharyi in 2014 (Basket 2016). The difference in the two figures may be explained by a series of oil palm permits that were cancelled by the Forest Department, as explained in the FFI report. Compared to permit areas, planting areas identified in the two reports were more closely aligned, although still inconsistent.[4]

4. MoAI 2012-13 data reporting almost 350,000 acres planted, and the 2014 DICD data reporting 346,500 acres planted oil palm (Woods, 2015; Baskett, 2016).

3. Methodology

This assessment followed a six-step methodological process, as summarised in Figure 2, below. Essentially, the process involved compiling existing data, identifying gaps (such as the extent of planted areas) and collecting data to build a more complete understanding. Oil palm plantation data were systematically coded and consolidated into a central database, a process that included cross-checking data with respective government agencies. Finally, data was analysed and a visual representation was developed to support the online data visualisation platform.

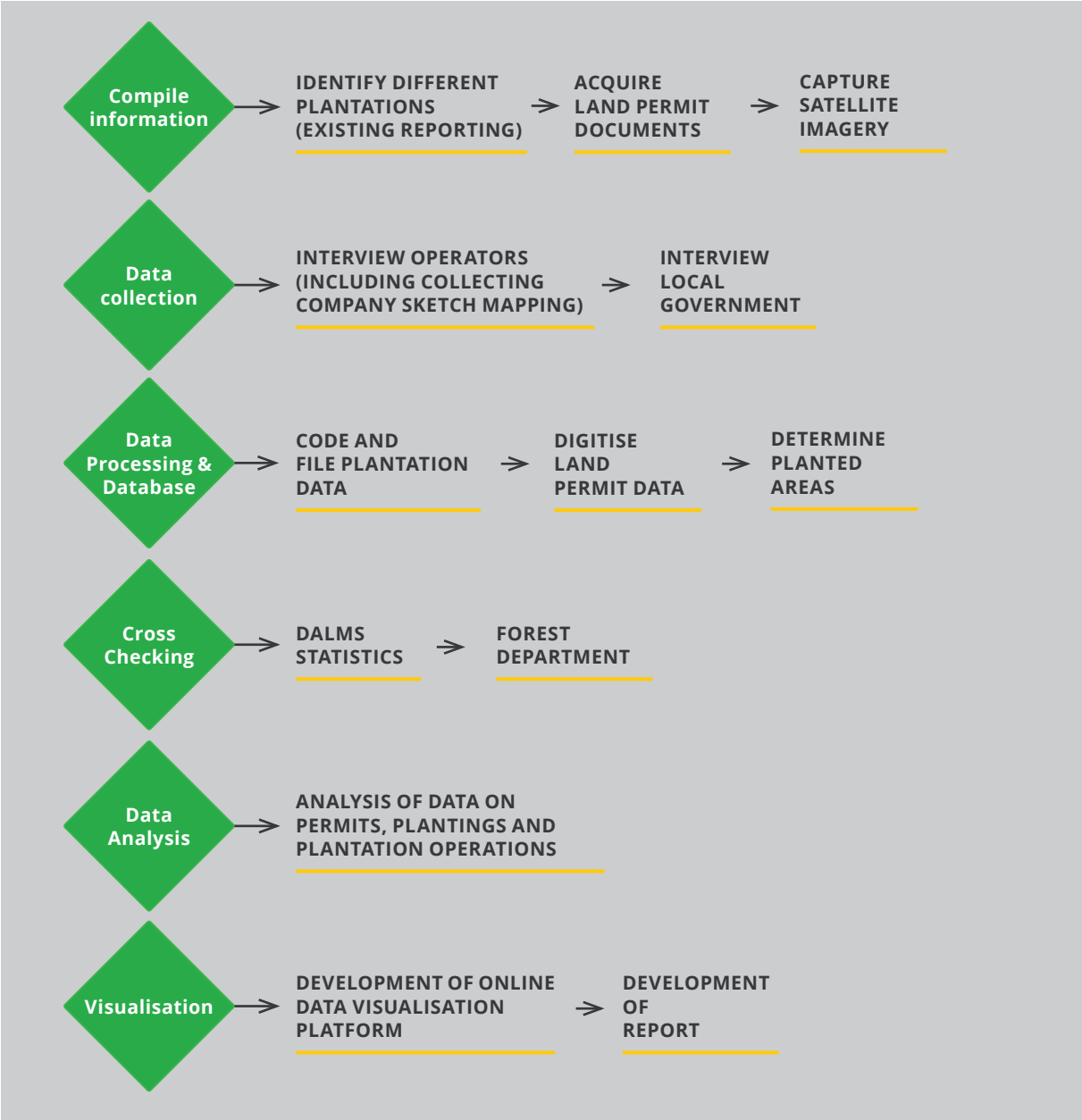


Figure 2:
Methodological Process

This process sought to produce three key datasets relating to oil palm plantations in Tanintharyi:

1. Identify and locate **all existing oil palm plantation operations**
2. **Obtain all land permits** for each oil palm plantation operation
3. Determine the **overall planted area** of each oil palm plantation operation

3.1 Identification of plantation operations

The starting point for this assessment was to identify all large scale (more than 500 acre) oil palm plantation operations in Tanintharyi Region. The assessment team used the Department of Agriculture (DoA) annual report as an initial list of operations. However, as this was not a comprehensive list, a process of reviewing reports and interviewing both government and non-government stakeholders was undertaken to identify gaps and map missing plantation operations. This produced a more complete list of all plantation operations which was validated with local township authorities.

3.2 Identification of oil palm permits and permit areas

The Government of Myanmar allocates land for oil palm plantations through issuing land permits. From a management and oversight perspective, the permits and the areas contained in these permits (or 'permit areas') are the most critical documents to locate, as they specify the area that the permit holder has been granted legal rights to undertake oil palm plantation operations. The issuing of land permits is highly controversial and often contested by local communities. Nevertheless, the permits are key to the management of land leases and the oil palm sector more broadly, as they allow government agencies and other stakeholders to identify the location of permitted areas for plantations. This enables plantation data to be analysed and trends to be identified.

The Government of Myanmar does not maintain a centralised database of existing permits and associated permit areas. To collect permit data, the assessment team visited the government agencies responsible for administering permits, primarily the Department of Agriculture and Land Management Statistics (DALMS) and the Forest Department. Where government agencies did not have permits, the assessment team met with plantation operators to obtain copies of their permit documentation.

3.3 Identification planted areas

A primary objective of this assessment was to estimate the amount of oil palm planted in each plantation operation. The aim was not to formally demarcate official planted areas, but rather to provide a broad understanding of the land use in the oil palm sector in Tanintharyi Region. While government data on the acreage of planted areas are available in annual reports, it is documented only as a numerical value and information on where planted areas are located is not included. This assessment sought to determine the location of all planted areas in Tanintharyi Region. To do this within the time constraints of the assessment, the following process was applied.

3.3.1 Interviews with local government officials and field survey working groups

Firstly, meetings with government officials from DALMS, the General Administration Department (GAD), Forest Department and DoA were arranged in Myeik, Tanintharyi, Bokpyin and Kawthaung townships. The assessment team also met with oil palm field survey working groups in Tanintharyi and Bokpyin, established by the oil palm TLC in 2017. These meetings were critical in informing an understanding of which plantations were operating, which had closed, or merged, and whether planting had been undertaken. Local government officials facilitated introductions with representatives from plantation operations.

Figure 3:
Plantation sketch mapping with plantation operators
Photo: Patrick Oswald

3.3.2 Sketch mapping by plantation operators

Using permit boundaries as a guide, the assessment team developed a series of sketch maps with high-resolution satellite imagery, mostly from the 2017-2018 dry season, that were printed on large vinyl sheets. Using these maps, plantation managers identified their planted areas of oil palm. Planted areas and plantation infrastructure were marked on the maps and notes were recorded on a separate sheet. Sketch maps from each oil palm operator were also digitised into GIS file formats to create a unique GIS layer (see dataset A, below). An example of company sketch mapping is provided at Appendix 1.

3.3.3 Visual identification of oil palm through satellite imagery

Using the sketch maps as a general guide, the assessment team analysed the planted areas using high definition 0.5 metre resolution satellite imagery. Areas inside and outside the operator's sketch map boundaries were reviewed to confirm whether there was strong visible evidence of oil palm in the satellite imagery. Areas confirmed through this process were documented as a unique GIS data layer (see dataset B, below).

3.3.4 Sub identification into well managed oil palm plantations

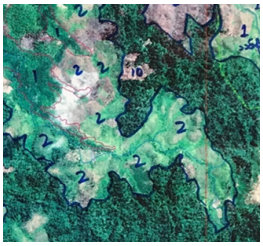
The assessment team reviewed dataset B to identify areas where plantations were well managed or maintained. This step was in response to feedback from civil society groups in Tanintharyi who expressed a willingness to differentiate areas of well managed, or productive, plantations from those that are less well managed or not operational. This unique data layer (dataset C) separates visibly well managed areas from areas that did not appear to be well managed. A plantation was defined as 'well managed' where the assessment team saw uniform plantations, in rows, without other vegetation or secondary forest regrowth. As this analysis was an unplanned addition to the assessment, it was undertaken under significant time constraints and, therefore, the findings are not as robust as that of dataset B.

3.3.5 Consolidated data layers

Together, the three datasets (A, B and C, below) provide an understanding of the overall size of planted areas, as well as the condition and economic viability of plantations. The purpose of the datasets, and this assessment more broadly, is not to provide a legal determination or definition

of planted areas. The process is effective and 'fit for purpose'[5] in providing a general overview of planted areas in Tanintharyi Region. Table 1 below summarises each dataset and provides a visual example of the types of areas allocated to each respective dataset.

Table 1: Planted area datasets developed by the assessment team

Dataset #	A	B	C
Dataset name	Company sketch mapping	Strong evidence of oil palm	Well managed oil palm plantations
Dataset Description	Planted areas identified by plantation managers through planted area sketch mapping process (step one, above).	Oil palm trees identified in high-resolution satellite imagery (also drone imagery in some areas), without taking into account the quality of plantations.	Areas identified in data-set B where clearly defined rows of dense plantations can be observed from satellite or drone imagery
Example			

3.4 Data Analysis

Following the collection of the above permit and plantation data, the assessment team undertook an analysis of this primary data to provide specific, evidence-based findings on the land use pertaining to oil palm plantations across Tanintharyi. The maps developed through the process were digitised and imported into GIS software. The assessment team then calculated the size (in acres) of permit areas, revoked permit areas and all three planted datasets (see Table 1, above).

By using GIS software, the assessment team was able to conduct spatial analysis and to overlay and compare different datasets. For example, overlaying permit areas on areas planted with oil palm to see the extent of planting inside and outside permit areas as well as areas not yet planted, despite permits having been issued.

In conducting the spatial analysis, every effort has been made to ensure the accuracy of determinations of areas with 'strong evidence of oil palm' (see Table 1, above). However, there is always a margin of error in assessments of plantations using satellite imagery. This is discussed further in the discussion section of this report.

Finally, since conducting the assessment, CDE has kept this data updated as new information has been shared by government agencies as part of the OMM project. However, the rapidly changing situation on the ground, combined with the absence of a centralised process to continually update permit and plantation areas, means that maps and figures quickly become outdated. Nevertheless, the data effectively provides a macro-level overview of the oil palm sector at a point in time, allowing issues and trends to be identified and providing useful information for decision-makers, communities and CSOs.

5. Note that more recent satellite imagery through Google Earth continues to show that some areas of planted oil palm continue to expand, making this data already out of date. Nevertheless the data is useful to provide an approximate overview of planted areas.

3.5 Data visualisation

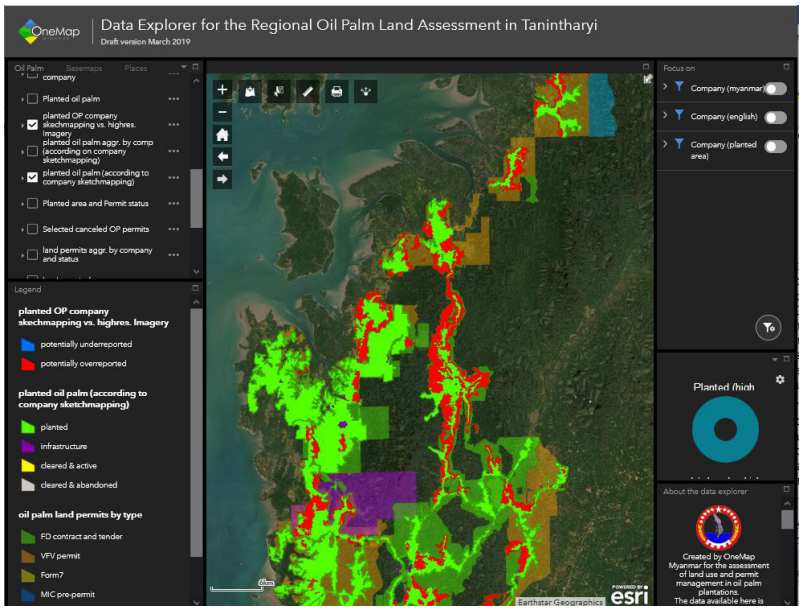


Figure 4:
Palm oil data visualisation platform

To allow data to be accessed and analysed by authorised users, including the Tanintharyi Regional Government and other members of the TLC, it was consolidated in a data visualisation platform. This allows the data to be easily understood and compared against other datasets, such as satellite imagery, forest boundaries, settlements and other land use datasets.

Maintaining an updated, centralised online database of oil palm data would enable government agencies to share information with other stakeholders, such as CSOs, communities and oil palm operators. Furthermore, information such as permit data, planted area data, satellite imagery and settlements change over time. While it is important to maintain hard copies of this information, having an updated, digital database would greatly support the government in assessing and monitoring land acquisitions and developments in a timely manner. It is hoped that this assessment will act as a proof of concept for the development of such a centralised database. Such a mechanism would allow stakeholders to monitor and manage agribusiness plantations (such as oil palm) and provide an evidence-based tool to determine the effectiveness of such agro-industrial models of development.

4. Assessment findings

This section outlines the findings of this macro-level assessment through a series of maps, tables and charts. Permit data is up to date as of July 2019, however, information was not obtained on all ongoing cancellations of permits that were being conducted by the government. Areas claimed to be planted by plantation operators are accurate as of August 2018 and verified using high-resolution satellite imagery from 2017 and 2018.

4.1 Overview of plantation operators and planted assessments

In total, 50 oil palm operators were identified, both private sector companies and government departments, that are in some way engaged in large scale oil palm plantations in Tanintharyi Region. The list of plantation operations with corresponding planting data is displayed by district and township in Table 2 below and their location in Tanintharyi is displayed in Figure 5.

Table 2: Identified plantation operations (more than 500 acres)

Dawei District	Myeik District	Kawthaung District
Yebyu Township	**Myeik Township**	**Bokpyin Township**
1-U Pyne - MEHL	13-Asia World	29-Royal Golden Pearl
2-Yaung Ni Oo	**Tanintharyi Township**	30-MRPP
3-Daw Yi Yi Win	14-MSPP	31-MAC
4-Shwe Padomar	15-Shwe Than Lwin	32-National Prosperity Company
5-Steelstone	16-Myan Naing Myint	33-Yuzana 2
6-U Thein Sein	17-Mg Weik Family	34-South Dagon (incl. Aung Yee Phyo)
7-Dept. of Agriculture (Ae Gani)	18-CKB	35-Armstrong
8-Dept. of Agriculture (Ta Hlaing Ya)	19-Dept. of Agriculture (Tanintharyi)*	36-Shwe Ahone
9-Ministry of Industry (Yebyu TS)	20-Tet Nay	37-Annawar Tun
10-Po Kaung (Yebyu)	21-Srisuban Myanmar	38-Shwe Myay Yadanar
Launglon Township	22-Shwe Kanbawza	39-Aung Zin Mar/Agrinexus
11-Ministry of Industry (Launglon)	23-Kyaw Maw 19	40-Po Kaung (Kawthaung Dt.)
Thayetchaung Township	24-Advance Seafood Industries	**Kawthaung Township**
12-Annawar Soe Moe	25-PPT (incl. Thein Khun Dev.)	41-Yuzana 1 (DoA data includes 33)
	26-Vantage	42-Dagon Timber
	27-Htoo Trading (incl. Myanmar Avia)	43-Super One
	28-Atro Agro	44-Ministry of Industry (1)
		45-U Aung Naing (& associated smallholder)
		46-Dept. of Agriculture (Hustin)
		47-Dept. of Agriculture (Aw Gyi)
		48-Dept. of Agriculture (Yedagon)
		49-Dept. of Agriculture (Maliwun)
		50-Shwe Siown

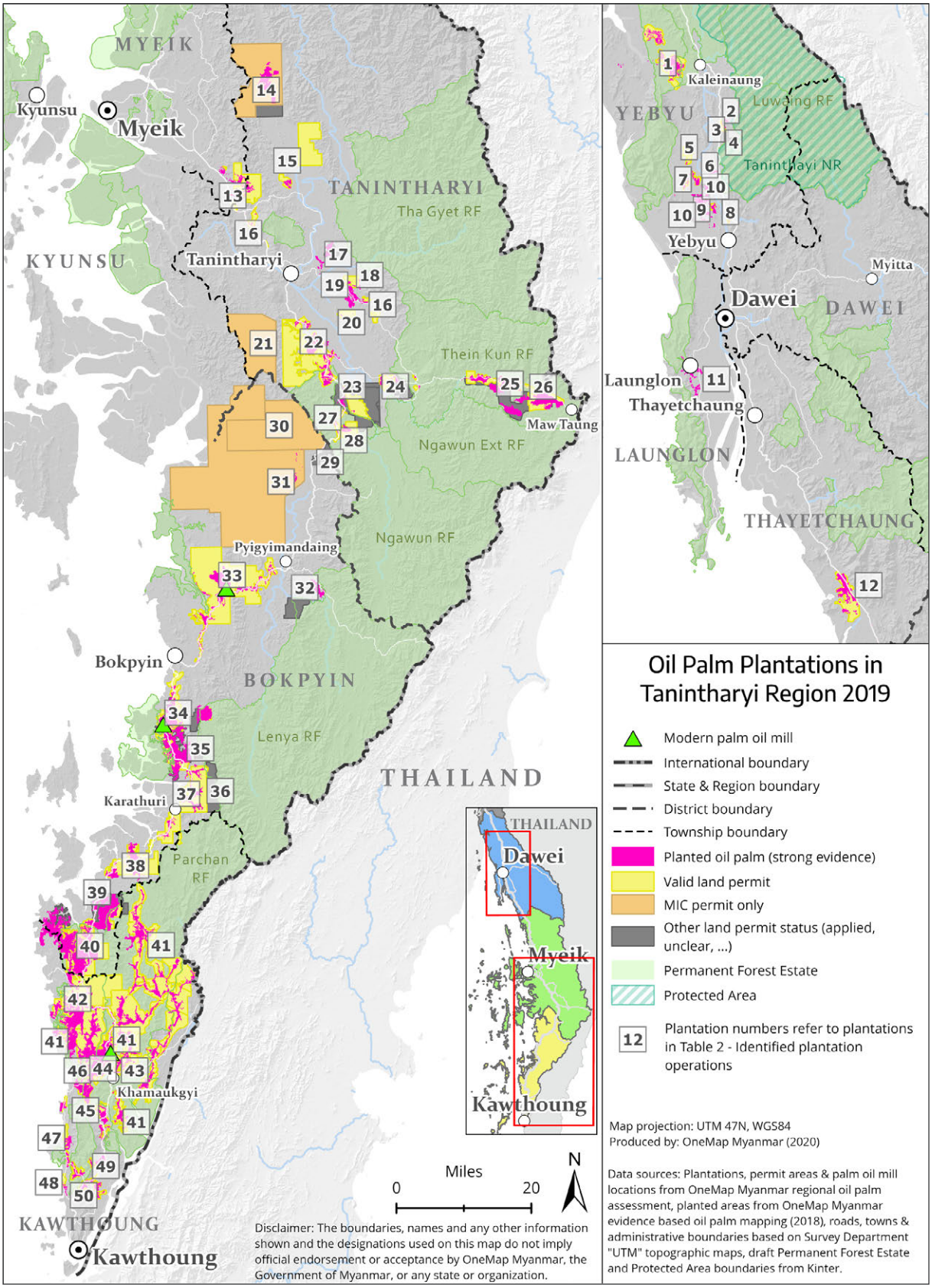


Figure 5:
Oil palm plantations in Tanintharyi Region

Although the assessment identified these 50 operations, there were only 7 major operators found to have plantations in excess of 6,000 acres. These are Yuzana, Po Kaung, South Dagon, PPT, KBZ, Dagon Timber and the Government of Myanmar. Together these 7 operators account for the majority of planted oil palm (over 150,000 acres)[6]

4.2 Identifying permits

Oil palm plantations were found to be using a variety of different permits to conduct their operations. Table 3, below, lists and briefly describes each permit type identified in this assessment.

Table 3: Oil palm planting permit types

Permit Type	Description	Issuing Agency
Forest Department contract and tender	Permits issued across designated 'forest land' either through contracts or tenders.	Forest Department
VFV permit*	Permits issued on land that is designated by the government as vacant, fallow or virgin land, under the 2012 VFV Lands Management Law or the 1991 Wasteland Instructions.	DALMS
MIC permit	These permits do not provide land tenure. They are issued as part of the process that foreign companies (and local companies wanting to apply for tax-free status), must undertake in the initial stages of gaining investment approval.	Myanmar Investment Commission (MIC)
Tayaka permit	Permits granted by the regional military authorities in 1999 and early 2000s. Typically, these are letters with no attached map.	Regional Military Command
Form 7	The Farmland Law allows farmers to register for Land Use Certificates (LUC) for areas classified as farmland. While ownership still resides with the State, these LUCs, commonly known as Form 7, confer various property rights over the farmland, including the rights of possession, use, benefit, sale, mortgage, lease, exchange, inheritance and gift. (Spectrum 2015)	DALMS
Other and Unclear / Unknown	Other permits or oil palm plantations where the assessment team was not able to obtain or else to clearly identify the type of the permit.	Not applicable

**VFV permits include permits issued under the 1991 Wasteland Instructions*

That fact that permits are issued and managed by different agencies in different localities contributed to the difficulty of obtaining an overview of all plantation operations. It is likely that the Tanintharyi Regional Government faces similar challenges in the monitoring and management of the oil palm sector. Many permits are also stored only at township offices, further limiting the capacity of a central regional authority to monitor all oil palm permits.

Importantly, it was found that not all plantation operations have valid land permits. For example, some were operating with old Tayaka permits, awarded during the previous military State Peace and Development Council (SPDC) era. However, these were being replaced with more up to date permits and, by the end of the assessment period, only one Tayaka permit was still to be replaced. In other instances, plantations were being established with only a pending land permit.

4.2.1 Permit documents and permit areas

Table 4 and Figure 7, below, disaggregate the permit documents by type, acreage and the year of issue. In total, the assessment found 184 permit areas issued in 119 unique permit documents.

5. See Appendix 5 for spatial analysis of these 7 major plantation operators.

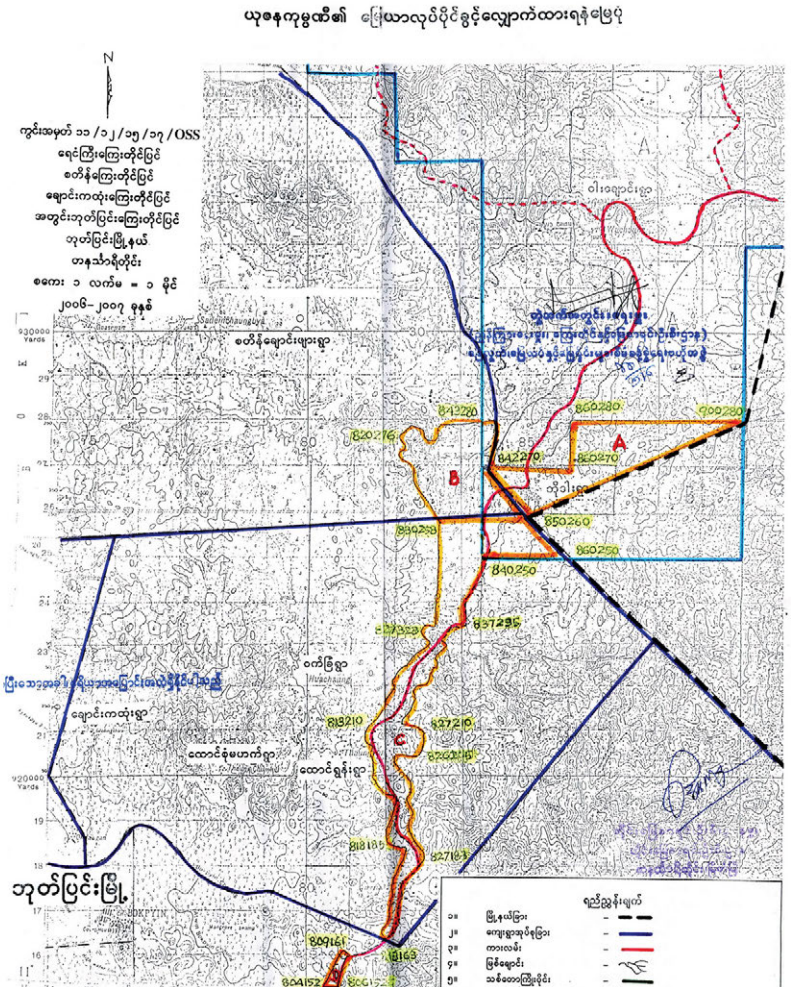


Figure 6:
Example of permit map showing sub-permit areas

While the majority of permits only identify a single block where plantations are authorised, some contain multiple distinct permit areas that may be adjoining or separate. Figure 6, below, provides an example of where a single VFV permit identifies four distinct permit areas (A, B, C and D).

Table 4 and Figure 7, further below, assess each permit area as a distinct entity, as they each have a identified planting area and, presumably, could individually be revoked from a permit. In the data visualisation platform, permit areas are identified as sub-areas of a larger permit.

Typically, large-scale oil palm operations have multiple permits, sometimes 10 or more, covering planting areas across the plantation. The exception is an MIC permit, which are single authorisations for very large areas that enable tax exemptions on an investment but do not provide permission to plant crops (this is explained further below).

Table 4, below, provides the total of each type of permit area identified in the assessment, categorised according to the relevant government period. As shown, the majority of permits (55%) were issued during the pre-2010 military government period under the 1991 Wasteland Instructions. Approximately 35% of oil palm permits were issued under the USDP and only a small number (6%) were issued under the National League for Democracy (NLD) government. It is important to note that these findings do not distinguish between updates to existing permits and brand new permits, issued over land that had never been under permit previously.

Table 4: Permit issuance against government periods (by permit areas)

Permit Type	Date unknown	Military Govt before 2010-Apr-01	USDP Govt 2010-Apr-01 - 2016-Jan-31	NLD govt (after 2016-Feb-01)	Grand Total
FD contract		15	50	9	74
FD tender contract			1	3	4
Form 7*	(1)		(4)		(5)
MIC permit			4		4
Other	1				1
Tayaka permit		1			1
VFV permit**	6	87	7		100
Grand Total	**7**	**103**	**62**	**12**	**184**

** Form 7 values represent the number of plantation operations that use a Form 7 land use certificates among other tenure documents.*

*** VFV permits include permits issued under the 1991 Wasteland Instructions.*

Note: This table only includes the most recent permit relevant for each plantation area. As such, if a company had previously been recieved an MIC or Tayaka pre-permit during the USDP Government era, but been issued a VFV permit in the NLD era, this table will only count the most recent VFV permit and not the MIC permit to avoid double counting.

Some plantation operations were found to be operating with only MIC permits, which on their own, do not provide legal land tenure. MIC permits are a prerequisite for foreign companies, joint ventures or Myanmar companies seeking tax exemptions, to be granted permission to begin operations. For the purposes of this report, operations using an MIC permit as well as a permit providing legal land tenure are listed under the relevant permit. The 4 MIC permits listed in Table 4, above, are those where operators were found not to have any other land tenure permits as of December 2017.

What are MIC permits?

According to the 2016 Myanmar Investment Law (MIL), investors must apply to the Myanmar Investment Commission (MIC) for an MIC Permit for investments which involve a concession with government of value more than USD 20 million; agricultural investment of more than 1000 acres; have large potential impact on the environment and local community (in practice, those required to undertake an EIA); involve land which has been compulsorily acquired of more than 100 acres or involving resettlement or economic displacement of more than 100 individuals.

The MIC permit is required for such investments to go ahead, however it is not a land permit. Under the MIC permits, companies are supposed to apply for land permits from the appropriate authority (DALMS for VFV or Forest Department for forest areas) in order to use the land.

Foreign investors face further restrictions as they unable to acquire land rights for more than 1 year without obtaining a separate "land rights authorization." The MIL allows foreign investors to apply to the MIC for this authorization alongside the MIC Permit. MIC permits are issued together with 'Production Sharing Agreements' (PSA). This assessment has found that PSA's stipulate that the actual land area a company can plant is lower than that mentioned in their MIC permit.

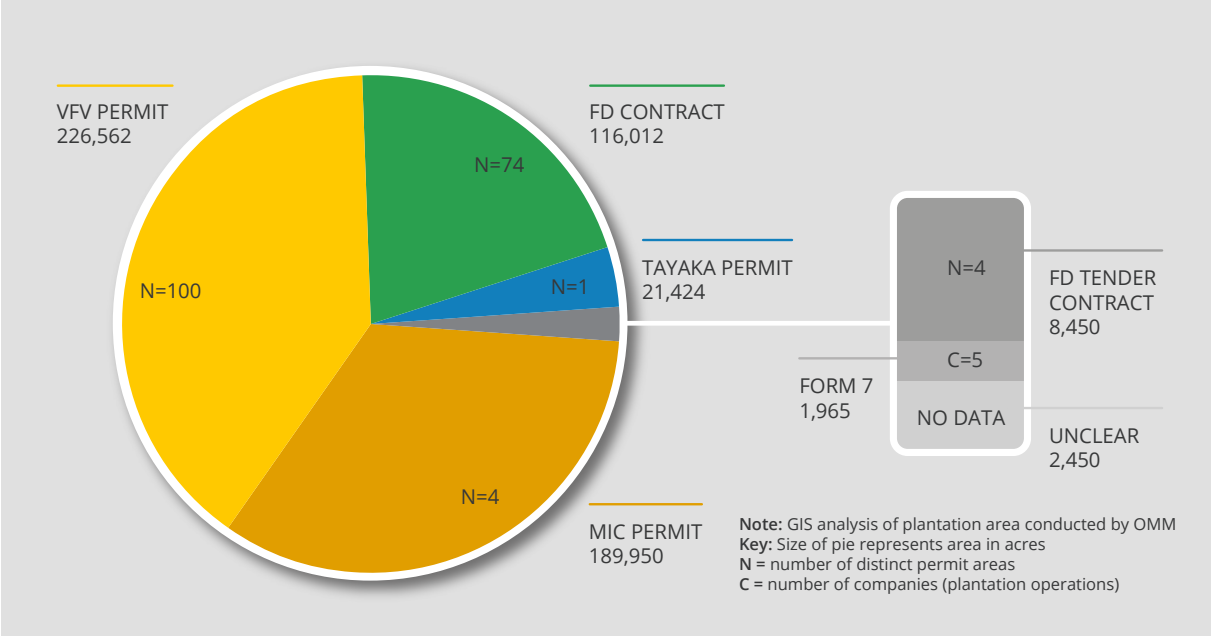


Figure 7:
Permit types by total area

4.2.2 Total land area by permit types

In total, the assessment identified 184 distinct permit areas across 119 permit documents (not including Form 7 land use certificates) covering a total of 566,812 acres. As shown at Figure 7, above, permits issued under the VFV Law (VFV permits) are the most common permit type, both in terms of total acreage under the permit class and the number of permits issued. MIC permits were found to have the largest average size, with 4 permits covering an area of 189,950 acres. Fewer FD contracts were issued than VFV permits and they covered less acres overall.

Figure 7 provides a visual representation of the total area covered, and the number of distinct permit areas, for each permit type. The total number of Form 7 land use certificates (LUC) is not shown, as these areas are typically very small and this assessment did not document each individual certificate. As shown in the graph, 5 plantation operations (all of which were managed by the DoA) were using Form 7 LUC to plant in some, or all, of the areas in their plantations.

While no private sector companies were found to have Form 7 LUC, several companies were in the process of attempting to convert VFV permits to Form 7s. The fact that such processes, made possible under the VFV Law, are being undertaken by private sector entities is a potential cause for concern. This is because, by acquiring a Form 7 LUC, private investors may be able to claim permanent ownership rights over large areas of land and pay considerably less in land taxes to the government. In comparison, in other countries in the region large-scale land investments are issued in the form of concessions or land lease agreements and cannot be transferred into permanent ownership or use rights.

4.2.3 Cancelled permits

Throughout the assessment, it became apparent that there is an ongoing process to cancel or reduce the overall size of many oil palm operations. Efforts to gather data on cancelled permits were complicated by the absence of standard operating procedures regarding how to cancel or amend permits. In total, the assessment obtained maps showing the cancellation of permits

covering roughly 200,000 acres. However, the total area may be larger, as not all information on cancellations was made available. It was also not clear how many cancelled permits would later be updated or reissued, for example through the aforementioned process of converting Tayaka permits into VFV permits.

4.3 Oil palm plantings

A key objective of this assessment was to determine the size of planted areas in each plantation and gain insights into the planting status of all oil palm operations. Applying the method outlined above, the assessment team collected permit and planting data for each plantation operation (listed in Table 2). This table forms the basis of much of the following analysis. Along with the total permit area of each operation, Table 5 below includes planting data from 'company sketch mapping', 'strong evidence of oil palm' and 'well managed oil palm plantations' (see datasets A, B and C at Table 1). Table 5 also provides official planting data recorded by the DoA for each operation. While, in some cases, the DoA's method of aggregating data (explained below) means there is missing information on government owned plantations, it is interesting to see how planted areas are overestimated in government data on a case-by-case basis and, therefore, to better understand issues relating to monitoring and oversight.

Significant discrepancies in planting datasets can clearly be seen in Table 5, below. Through the sketch mapping process, plantation operators identified a total of 215,500 acres of planted oil palm. However, the assessment team verified the existence of only 180,000 acres[7] with 'strong evidence of oil palm' which represents approximately 84% of the company sketch mapping area. Of this, approximately 156,000 acres were identified as areas of 'well managed oil palm plantations'.

Another important observation is the high rate of plantings recorded for all plantations in the DoA's official statistics, as shown in Table 5.[8] The DoA aggregates the total planted area of all government sector plantations (DoA and MoI) into a single total under 'national property'. The DoA reports a total of 388,496 acres of oil palm, a figure that differs significantly from other datasets. The DoA planting data represents a value of 1.8 times, or almost double, the rate of plantings recorded through company sketch mapping and more than double the 'strong evidence of oil palm' dataset. This indicates that official planting records are significantly over reporting and suggests that the DoA's current data collection methods should be reviewed.

It is not known whether over-reporting in official datasets is unique to the oil palm sector in Tanintharyi Region, or, representative of a trend in agribusiness across the region and possibly the country. Similar assessments and research into agribusiness plantings could help to ascertain the prevalence of inflated official planting statistics in other crops and locations. The discrepancies in official data on planted oil palm combined with the extent of inadequate management of plantations, indicate a need for a systematic review of agribusiness monitoring protocols. It is recommended that the Tanintharyi Regional Government undertake such a review before undertaking any major expansion of agribusiness operations.

7. This figure is consistent with the area of oil palm determined by Nomura in a peer reviewed scientific article that analysed oil palm over the same period. Nomura's used medium resolution satellite imagery and automated remote sensing, to estimate the amount of mature oil palm (older than 4 years) of approximately 185,000 acres (75,000 hectares) with a range between 170,000 – 200,000 acres (69-81 kilo hectares) which given analysis of mature trees only, corresponds well with the findings of this assessment (Nomura et.al., 2019).

8. A scan of the original document from which the DoA data is provided in Appendix 6.

Table 5: List of oil palm planted areas by operation

Name of company or plantation	Total permit area (ac.)	Company sketch-map (ac)	Strong evidence plantings (ac.)	Well managed (ac)	Planted area DoA 2018/19 (ac)
Dawei District	16,380	223	15,183	14,943	17,001
Yebyu Township	10,380	223	9,811	9,715	11,001
1-U Pyne - MEHL	6,791	No data	5,133	5,072	6,539
2-Yaung Ni Oo	No data	No data	161	161	No Data
3-Daw Yi Yi Win #	611	No data	34	30	Combined #4
4-Shwe Padomar	No data	No data	6	6	213
5-Steelstone	1,407	No data	58	48	2,247
6-U Thein Sein	No data	No data	377	362	No data
7-Dep. of Agriculture (Ae Gani)*	274	180	180	180	No data
8-Dep. of Agriculture (Ta Hlaing Ya)*	260	44	44	42	No data
9-Ministry of Industry (Yebyu TS)*	No data	No data	2,227	2,222	No data
10-Po Kaung (Yebyu)	1,038	No data	1,591	1,591	2,002
Launglon Township	-	-	1,607	1,607	-
11-Ministry of Industry (Launglon TS)*	No data	No data	1,607	1,607	No data
Thayetchaung Township	6,000	-	3,764	3,621	6,000
12-Annawar Soe Moe	6,000	-	3,764	3,621	6,000
Myeik District	134,812	37,313	30,772	23,462	59,154
Myeik Township	8,996	2,468	2,519	2,232	10,200
13-Asia World	8,996	2,468	2,519	2,232	10,200
Tanintharyi Township	125,816	34,844	28,253	21,230	46,504
14-MSPP	25,000	4,092	3,939	2,830	4,288
15-Shwe Than Lwin	13,442	524	517	499	1,438
16-Myan Naing Myint	2,308	363	340	338	2,308
17-Mg Weik Family	No data	792	688	297	1,020
18-CKB	2,000	566	366	366	1,876
19-Dep. of Agriculture (Tanintharyi TS)*	No data	5,029	2,645	2,625	-
20-Tet Nay	1,500	97	47	13	1,413
21-Srisuban Myanmar	31,350	-	-	-	-
22-Shwe Kanbawza	27,682	9,222	6,481	3,976	9,005
23-Kyaw Maw 19	3,985	96	67	65	720
24-Advance Seafood Industries	3,254	1,153	968	812	3,756
25-PPT (incl. Thein Khun Dev.)	10,525	10,500	10,533	8,633	16,985
26-Vantage	720	186	91	59	1,120
27-Htoo Trading (incl. Myanmar Avia)	1,050	1,710	1,085	330	2,075
28-Atro Agro	3,000	515	486	388	500
Myeik Dist cancelled or merged plantations listed in DoA					2,450
Kawthaung District	415,620	178,019	134,082	117,584	295,001
Bokpyin Township	250,041	92,642	67,014	54,894	87,090
29-Royal Golden Pearl	No data	81	24	21	593
30-MRPP	30.000	1,334	14	14	150

31-MAC	103.600	5,344	373	331	6,591
32-National Prosperity Company	No data	1,984	1,255	1,114	2,247
33-Yuzana 2 (DoA data combined Yuz 1)	49,128	15,989	9,856	5,764	Combined #41
34-South Dagon (incl. Aung Yee Phyo)	14,838	17,830	16,901	14,520	13,868
35-Armstrong	No data	455	65	65	375
36-Shwe Ahone	No data	-	0	-	400
37-Annawar Tun (OMM includes 38)	32,655	17,057	9,206	7,158	23,127
38-Shwe MyayYadanar (OMM incl 37)	No data	-	0	-	8,100
39-Aung Zin Mar/Agrinexus	No data	4,573	2,261	1,597	5,690
40-Po Kaung (Kawthaung Dt.)	19,820	27,994	27,059	24,311	25,949
Kawthaung Township	165,579	85,377	67,069	62,689	207,711
41-Yuzana 1 (DoA data includes 33)	125,124	66,444	51,952	49,774	191,348
42-Dagon Timber	33,151	9,308	6,252	4,573	14,578
43-Super One	700	700	287	287	750
44-Ministry of Industry (1)*	850	407	407	366	No data
45-U Aung Naing (associate/Sml-hder)	1,153	1,055	1,055	1,055	No data
46-Dep. of Agriculture (Hustin)*	2,450	2,088	1,739	1,320	No data
47-Dep. of Agriculture (Aw Gyi)*	No data	1,511	1,511	1,511	No data
48-Dep. of Agriculture (Yedagon)*	1,431	2,412	2,412	2,408	No data
49-Dep. of Agriculture (Maliwun)*	No data	1,032	1,032	973	No data
50-Shwe Siown	720	422	422	422	1,035
Kawthaung Dist cancelled or merged plantations listed in DoA					200
Subtotal DoA listed OP companies					371,156
*: National property (DoA & MoI plantations aggregated for all Tanintharyi - OMM calculates 14,153 ac.)					17,340
Grand Total	566,812	215,555	180,037	155,988	388,496
small holders total (not assessed)					9,911
military total (not assessed)					2,276
DoA total OP plantings including small holder and military plantings					400,683

 # Daw Yi Yi Win and Shwe Padoma are combined in DoA data *Note: GIS analysis by CDE*

4.3.1 Permits and plantings as a percentage of land area

The move to large-scale, monoculture crop production in Myanmar comes with several ecological, social and commercial risks. High dependence on a single species of crop brings significant economic risks for a region (Murray-Li 2014). Both globally and in countries neighbouring Myanmar, large-scale agribusiness is criticised for acquiring too much land, at the expense of local livelihoods (Malkamäki, et.al., 2018). In Tanintharyi, CSOs and communities are already reporting that oil palm plantations are negatively affecting livelihoods (ALARM et.al., 2018; Tarkapaw et.al., 2016). These concerns were one of the reasons that the Tanintharyi Regional Government requested this assessment.

In light of these risks, and to understand the extent to which oil palm is dominating the landscape in Tanintharyi, the assessment calculated the proportion of the land area impacted by oil palm in each township. Table 6, below, calculates the permit areas for oil palm and the 'strong evidence of oil palm' data as a percentage of the total land area on the Tanintharyi mainland. As can be observed, 6% of the land has been allocated for large scale oil palm cultivation. Using the 'strong evidence of oil palm' dataset, we can see that 2% of is planted with oil palm already. This is spread across Tanintharyi, with the two southern townships of Bokpyin and Kawthaung hosting a much greater proportion of oil palm permits than other townships in the region.

Table 6: Oil palm as a percentage of all land (mainland)

Township	Total tsp land area (acres) (mainland only)	Total oil palm permit area (acres)	Permit as % of land area (mainland)	Total planted areas (acres)	Planted oil palm as % of land area (mainland)
Yebyu	1,001,587	10,380	1%	9,811	1%
Dawei	1,686,264	0	0%	-	0%
Launglon	180,087	-	0%	1,607	1%
Thayetchaung	516,926	6,000	1%	3,764	1%
Palaw	549,731	-	0%	-	0%
Myeik	300,441	8,996	3%	2,519	1%
Tanintharyi	2,805,701	125,816	4%	28,253	1%
Kyunsu	407,799	-	0%	-	0%
Bokpyin	1,292,695	250,041	19%	67,014	5%
Kawthaung	518,434	165,579	32%	67,069	13%
Total	9,259,665	566,812	6%	180,037	2%

Note: Planting data derived from strong evidence dataset in Table 5
Land area calculated from GIS analysis by OneMap Myanmar

As can be observed in Table 6, 250,000 acres of land, or 19% of the mainland area, in Bokpyin Township was found to be allocated to oil palm production. More than half of this area is allocated to two private investors (MRPP and MAC) holding only MIC permits and, at the time of writing, operating without any formal land permits. Nevertheless, if the MIC permits were formalised, a total of 133,600 acres would be granted for planting oil palm to these two investors alone.

Further south in Kawthaung Township, approximately 165,500 acres, or 32% of the mainland area, was found to be allocated to oil palm production. Significantly, it was found that 67,000 acres, or 13%, of the township was already planted with oil palm.

Figure 8, below, shows the extent of oil palm permits and permits across southern Bokpyin and Kawthaung townships. As explained in the key, the pink shading represents plantings according to the 'strong evidence of oil palm' dataset, while red shading shows 'company sketch mapping' that could not be verified, suggesting that a larger area may have already been planted. Yellow shading represents the total permitted area granted to plantation operators. Importantly, this map demonstrates the risk that oil palm will triple in scale and occupy a third of the land mass of Kawthaung Township. Such an expansion brings significant agro-ecological and livelihood risks and it is strongly recommended that a social and environmental impact assessment is conducted before plantations are established.

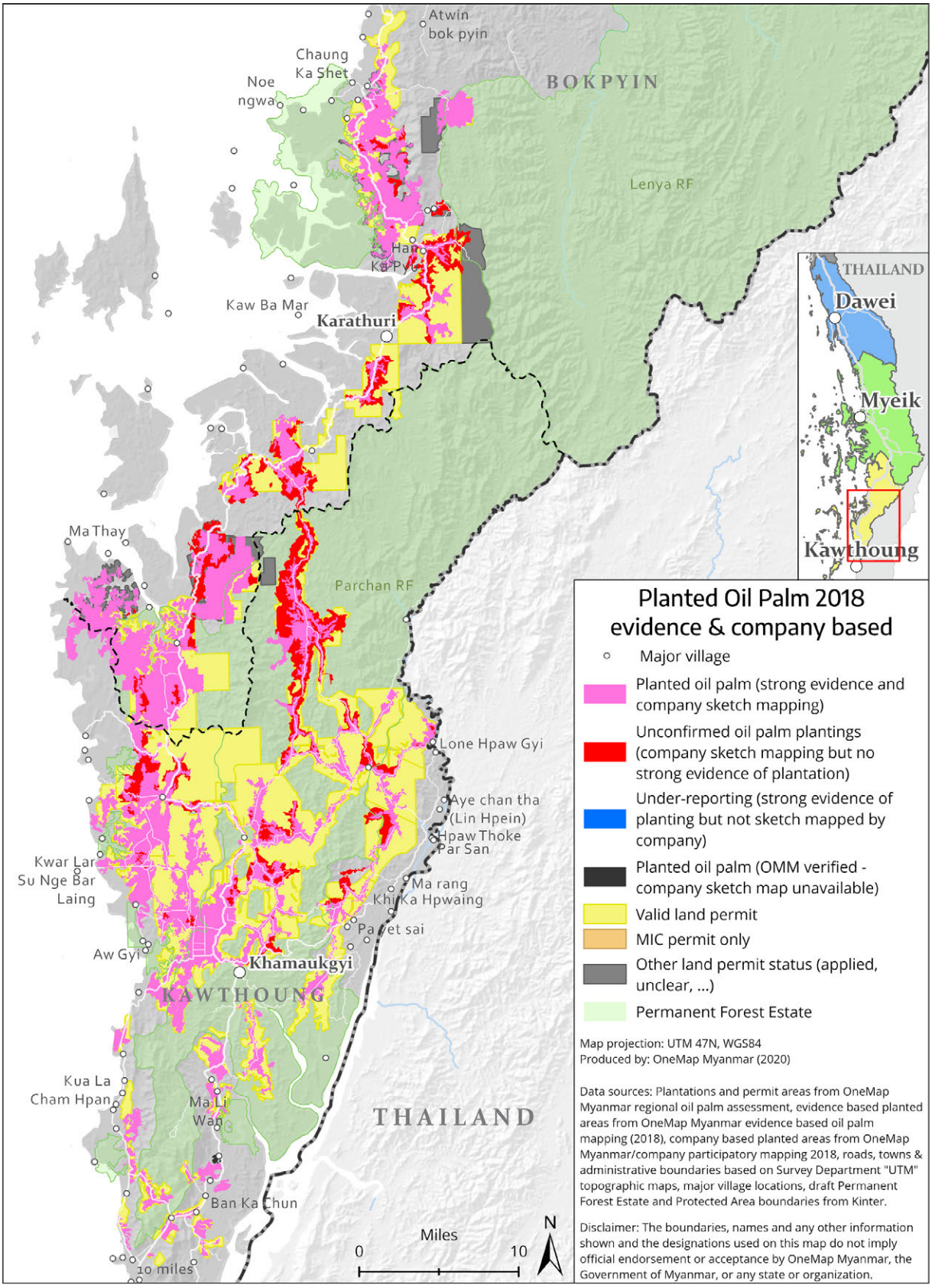


Figure 8:

Plantation permits and plantings across southern Bokpyin and Kawthaung townships

4.3.2 Active plantings as a percentage of permit areas

An important aspect of this assessment was to compare the extent to which oil palm has been planted with the total permitted areas. In many low-to-middle income countries, large scale agribusiness is criticized as being a way for the elite to acquire land, or, to enable logging of valuable timber. One metric to help understand whether this may be an issue in Tanintharyi is through an examination of planting rates against oil palm permits. Table 7, below, highlights trends across townships by omitting data on individual operations.

Table 7: Permits and planting area (acres) datasets by township

Township	Permitted planting area (ac.)	Company sketch map*	Strong evidence (SE)	Well managed
Yebyu	10,380	223	9,811	9,715
Launglon	NO DATA	0	1,607	1,607
Thayetchaung	6,000	0	3,764	3,621
Myeik	8,996	2,468	2,519	2,232
Tanintharyi	125,816	34,844	28,253	21,230
Bokpyin	250,041	92,642	67,014	54,894
Kawthaung	165,579	85,377	67,069	62,689
Grand Total	**566,812**	**215,555**	**180,037**	**155,988**

Note: Data derived from Table 5, this report

** Sketch maps could not be obtained from all plantation operations, particularly in Yebyu township.*

Before analysing this data further, it is important to note that in Tanintharyi and Bokpyin townships, the comparison of planting and permit area data is somewhat skewed. In these areas, 4 large scale projects with only MIC permits and very low rates of planting were found to account for 189,950 acres of permit areas. At the time this analysis was undertaken, these plantations were operating with only MIC permits, and without legal land tenure permits. Table 8, below, lists the 4 MIC operations identified in the assessment and their respective permit and planting datasets.

Table 8: Plantations operating only under MIC permits

Plantations with only MIC permits	Permitted planting area (ac.)	Company sketch map	OMM planting strong evidence (SE)	Well maintained
Tanintharyi				
MSPP	25,000	4,092	3,939	2,830
Sri Suban	31,350	0	0	0
Total	56,350	4,092	3,939	2,830
Bokpyin				
MRPP	30,000	1,334	14	14
MAC	103,600	5,344	373	331
Total	133,600	6,678	387	345

Note: Data derived from Table 5, this report

As can be observed, the 4 MIC permits were issued for very large areas of 25,000 acres or more. However, it is possible that, if issued, formal land permits may not include the full area stipulated in the MIC agreement. This was the case for SKBZ, a company that was holding a MIC permit for 27,682 acres and was reportedly in negotiations to reduce the permit area to less than 10,000 acres. Similarly, in the case of Sri Suban it was understood that the company had constructed various facilities but was yet to plant oil palm. Sri Suban stated that they were waiting on the

final, legal land tenure permits to be issued before beginning planting. This reflects an inability to acquire legal land tenure permits, rather than poor performance of the oil palm plantation. Lastly, the MIC permit issued to MAC is for 103,000 acres, which is more what is legally possible to grant under the VFV Law[9] and would therefore likely be reduced.

In light of these possible changes to MIC permits, and in the interest of promoting informed discussion, the rate of plantings has been listed by township and figures including and excluding MIC permits have been provided. For simplicity, the 'strong evidence of oil palm' dataset has been applied as a mid-level value in this analysis.

Table 9: Oil palm plantings as a percentage of total permit area

Township	Permitted area (incl. MIC)	Planted Area (incl. MIC)	Planting rates	Permitted area (exclude MIC)	Planted Area (exclude MIC)	Planting rates
Yebyu	10,380	9,811	94.5%	10,380	9,811	94.5%
Launglon	NO DATA	1,607	unclear	NO DATA	1,607	unclear
Thayetchaung	6,000	3,764	62.7%	6,000	3,764	62.7%
Myeik	8,996	2,519	28.0%	8,996	2,519	28.0%
Tanintharyi	125,816	28,253	22.5%	69,466	24,314	35.0%
Bokpyin	250,041	67,014	26.8%	116,441	66,627	57.2%
Kawthaung	165,579	67,069	40.5%	165,579	67,069	40.5%
Grand Total	**566,812**	**180,037**	**31.8%**	**376,862**	**175,711**	**46.6%**

Note: Data derived from Table 5, this report

Overall, oil palm plantings were found to cover only 32% of permitted areas. When MIC permits are excluded, this figure rises to 47% which is still less than half of the total permit areas, despite the vast majority of permits having been issued more than 4 years prior to the assessment having been undertaken[10]. This suggests that the amount of oil palm planted in Tanintharyi Region could double, or possibly triple, if oil palm was planted in all permitted areas. In light of reported concerns among CSOs and communities regarding large scale agribusiness (ALARM et.al., 2018; Tarkapaw et.al., 2016), it is imperative that decision-makers carefully consider the ecological and livelihood risks of this significant increase.

Rates of plantings across townships were not found to be consistent, as reflected in the township planting data in Table 9, above. In general, it could be expected that townships with a smaller permitted area may have a higher rate of plantings. While this is the case in Yebyu Township, in Myeik Township only 28% of permitted areas had been planted. Comparatively low rates of planting were found in Tanintharyi Township, where a little more than one-third of the total permitted area had been planted. In Bokpyin Township, planting rates rise from 27% to 57% when MIC permits are excluded, due to large size of the MIC permit granted to MAC.

4.3.3 Planting data by oil palm operation

While reviewing plantation data by township highlights potential trends, to develop a more comprehensive understanding of the oil palm sector, it is important to examine the operations individually. Figures 9 and 10, below, document each plantation operating with total permits of over 6,000 acres. Data has been separated into plantations with medium-sized permit areas (total

9. Article 10(a) of the VFV Law provides that the VFV Central Committee may grant land for agricultural business including perennial crops and industrial crops up to a total of 30,000 acres.

10. Under article 16(b) of the Vacant, Fallow and Virgin Land Management Law, business must be completed within 4 years from the day permission is granted.

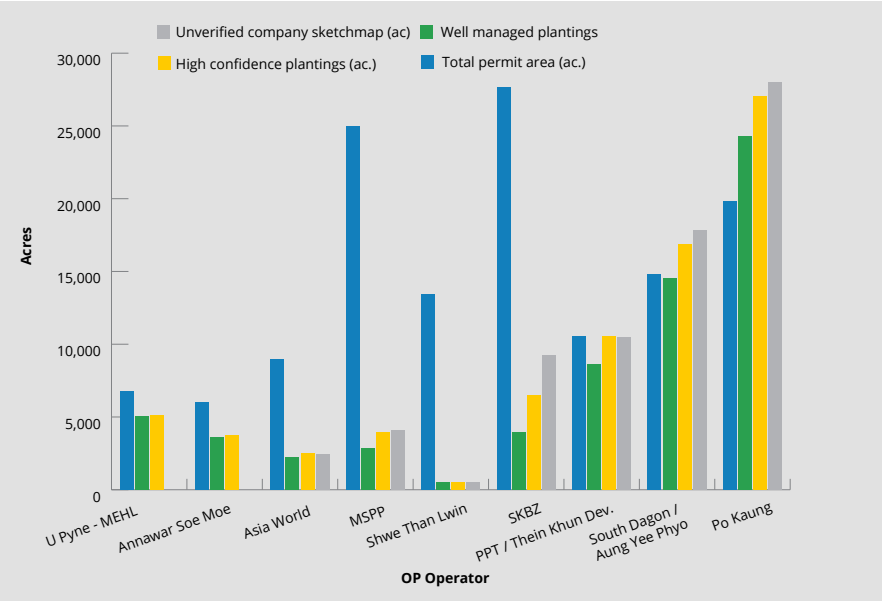


Figure 9:
Plantations by operation (medium-sized permit area: 6,000 - 30,000 acres)

permit area between 6,000 acres to 30,000 acres) and plantations with large-sized permit areas (total permit area greater than 30,000 acres). Plantations with small-sized permit areas (less than 6,000 acres) are not included, due to the large number of operations and the lack of complete data on smaller plantations. Similarly, DoA records were not included in this analysis due to the incompleteness of the data. However, graphs with all available data for plantations with small, medium and large-sized permit areas[11], complete with DoA data, can be found in Appendix 3.

Importantly, Figure 9, above, and 10, below, highlight the extent of underplanting within certain plantation operations, particularly in plantations with large, and some medium, sized permit areas. The extent of underplanting raises questions regarding the capability of permit holders to implement operations in such large areas. To understand this, however, further research as to why plantation rates are so low across certain operations would be required. In contrast, there were also cases where plantation rates are higher than permitted areas, as in the case of Po Kaung and South Dagon. Such variations suggest a need for more effective monitoring of plantation operations to support improvements in the management of the sector. Lastly, except for a few cases, the analysis above highlights large gaps between 'company sketch mapping' and data for 'strong evidence of oil palm'. Table 10, below, examines this trend and calculates the difference (or gap) between the total acreage given in 'company sketch mapping' and the total acreage that could be verified by this assessment in the 'strong evidence of oil palm' dataset (see Table 1 for datasets). The difference between these two figures is presented as an "unverifiable gap", or, the total number of acres where oil palm plantings could not be visually identified, despite operators claiming they had planted. This gap is an important indicator of how well operators may be managing plantations. Table 10, below, presents the total acreage of this "unverifiable gap" and calculates it as a percentage of the 'company sketch mapping' data. A high percentage value is, therefore, more problematic as it is indicative of a failure to manage plantations.

11. The categorisation of plantations with small, medium and large sized permit areas is only relevant for this data visualisation and is not a criteria that should be applied more broadly.

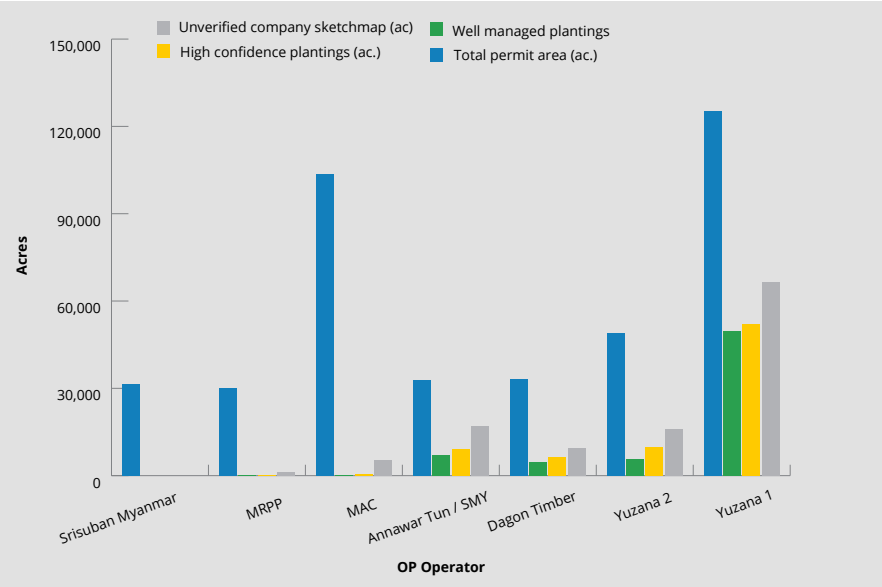


Figure 10:
Plantings by operation (large-sized permit area: more than 30,000 acres)

Table 10: Comparison of 'company sketch mapping' and 'strong evidence of oil palm' data

Company name	Company sketch map (acres)	Strong evidence (acres)	Unverifiable gap (acres)	Gap as % of sketch map
Yuzana 1	66,444	51,952	14,492	21.8%
Annawar Tun / Shwe Myay Ydnr	17,057	9,206	7,850	46.0%
Yuzana 2	15,989	9,856	6,134	38.4%
MAC	5,344	373	4,971	93.0%
Dagon Timber	9,308	6,252	3,056	32.8%
Shwe Kanbawza	9,222	6,481	2,740	29.7%
Dept. of Agriculture (TNI TS)	5,029	2,645	2,383	47.4%
Aung Zin Mar/Agrinexus	4,573	2,261	2,313	50.6%
MRPP	1,334	14	1,320	98.9%
Po Kaung (Kawthaung Dt.)	27,994	27,059	935	3.3%
South Dagon (incl. Aung Yee Phyo)	17,830	16,901	929	5.2%
National Prosperity Company	1,984	1,255	729	36.8%
Htoo Trading	1,710	1,085	625	36.5%
Super One	700	287	413	58.9%
Armstrong	455	65	390	85.8%
Dept. of Agriculture (Hustin)	2,088	1,739	348	16.7%
CKB	566	366	200	35.3%
Advance Seafood Industries	1,153	968	185	16.0%
MSPP	4,092	3,939	153	3.7%
Mg Weik Family	792	688	104	13.1%
Vantage	186	91	96	51.3%
Royal Golden Pearl	81	24	57	70.1%
Tet Nay	97	47	51	52.1%
Kyaw Maw 19	96	67	29	30.1%
Atro Agro	515	486	29	5.6%
Myan Naing Myint	363	340	23	6.2%

Shwe Than Lwin	524	517	7	1.4%
Dept. of Agriculture (Maliwun)	1,032	1,032	0	0.0%
Shwe Siown	422	422	0	0.0%
Dept. of Agriculture (Ae Gani)	180	180	0	0.0%
Dept. of Agriculture (Yedagon)	2,412	2,412	0	0.0%
Ministry of Industry (1)	407	407	0	0.0%
U Aung Naing (& assoc./SmHdr)	1,055	1,055	0	0.0%
Dept. of Agriculture (Aw Gyi)	1,511	1,511	0	0.0%
Dept. of Agriculture (Ta Hlaing Ya)	44	44	0	0.0%
PPT (incl. Thein Khun Dev.)	10,500	10,533	-33	-0.3%
Asia World	2,468	2,519	-51	-2.1%

Note: Data derived from Table 5, this report

As shown in Table 10, above, 9 out of 37 plantations had more than 1,300 acres of land where there was no strong evidence of oil palm planted, with 4 plantations exceeding 4,900 acres of unverified plantings. Equally, if not more, important, is that, in 8 plantations, it was not possible to verify more than 50% of planted areas. The 2 plantations with the highest unverifiable gap of their stated sketch mapping area were MRPP (99%) and MAC (93%), both of which have only MIC permits.

Overall, the gaps identified between 'company sketch mapping' and 'strong evidence of oil palm' raise concerns as to the consistency and effectiveness of plantation management. Further research should be undertaken to understand the reasons for these gaps. This will assist in providing evidence as to whether land allocated for oil palm plantations is being cultivated efficiently and productively by plantation operators, as per their management plans.

4.3.4 Extent of oil palm plantings outside permit boundaries

An unexpected finding was the amount of oil palm that had been planted outside of permit boundaries. To understand the extent of this issue, the assessment team mapped permit area boundaries across the 'strong evidence of oil palm' dataset and company sketch maps. Due to the imprecision of land permits, it was often challenging to determine a precise boundary. Nevertheless, based on the data available, it was possible to identify a high percentage of planting outside permit areas and often well beyond the permit boundaries.

Table 11, below, shows the value and rate of planting conducted outside of permit boundaries by township, based on the 'strong evidence of oil palm' dataset. Where permits had not been located, the planting data was removed as, without the permit, it was not possible to determine whether planting is inside or outside permit boundaries. The data in Table 11, below, is drawn from a total of 34 plantation operations where the permits and permit boundaries were known.

Table 11: Oil palm plantings outside of permit boundaries (acres)

Township	Strong evidence (SE) of oil palm*	SE planted outside permit	% SE planted outside
Yebyu	7,045	3,882	55%
Launglon	0	0	0
Thayetchaung	3,764	284	8%
Myeik	2,519	1,224	49%
Tanintharyi	24,920	10,976	44%
Bokpyin	63,409	24,921	39%
Kawthaung	64,526	11,234	17%
Grand Total	**166,183**	**54,128**	**33%**

** Excluding operators where permit data not available*

Note: Data derived from Table 5, this report

GIS analysis by CDE

The data in Table 11 is current as at November 2018 and new permits may have since been issued. Additionally, while every attempt was made to collect relevant permit data from operators and government authorities, some permits may have been missed. A centralised and regularly updated database of all current and valid permits would provide greater clarity on permit locations and enable real-time monitoring. Nevertheless, based on the permit data collected, substantial areas of plantations were found to have been planted outside permit boundaries.

An estimated one-third of all oil palm plantings in Tanintharyi Region, (approximately 54,000 acres) were identified as being outside of permit boundaries, based on the 'strong evidence of oil palm' dataset. The highest rates of plantings outside permit boundaries (more than 10,000 acres) were found in the three southern townships of Tanintharyi, Bokpyin and Kawthaung. In Yebyu, Myeik, Tanintharyi and Bokpyin townships, more than 39% of total plantings were found to be outside permit boundaries. Figure 11, below, provides an example of some of the larger areas of oil palm planted outside of permit boundaries in southern Bokpyin and Kawthaung townships.

While villagers may have little understanding of where permit boundaries are located and limited access to relevant information, plantation operators should have the capacity to monitor whether their plantations are going beyond permit boundaries. In light of this, it is surprising that up to a third of all plantings across Tanintharyi were found outside of designated permit boundaries, suggesting a concerning trend that requires further investigation. In order to encourage greater compliance with permits and related laws, it is recommended that authorities consider implementing appropriate actions, such as penalising operators, or removing plantations and rehabilitating plantations outside permit boundaries to previous land use.

Figure 11, below, provides a spatial representation of plantings inside and outside permit areas in southern Tanintharyi. The analysis presented in the map is based on the 'strong evidence of oil palm' dataset, with planted areas outside permit boundaries shaded red and planted areas inside permit areas shaded green.[12] It is important to note that, if the 'company sketch mapping' dataset was used as the basis of the planting data in this analysis, the total area planted outside of permit boundaries would increase further.

12. A map of Tanintharyi Region showing all 'strong evidence of oil palm' data against permit boundaries can be found at Appendix 4

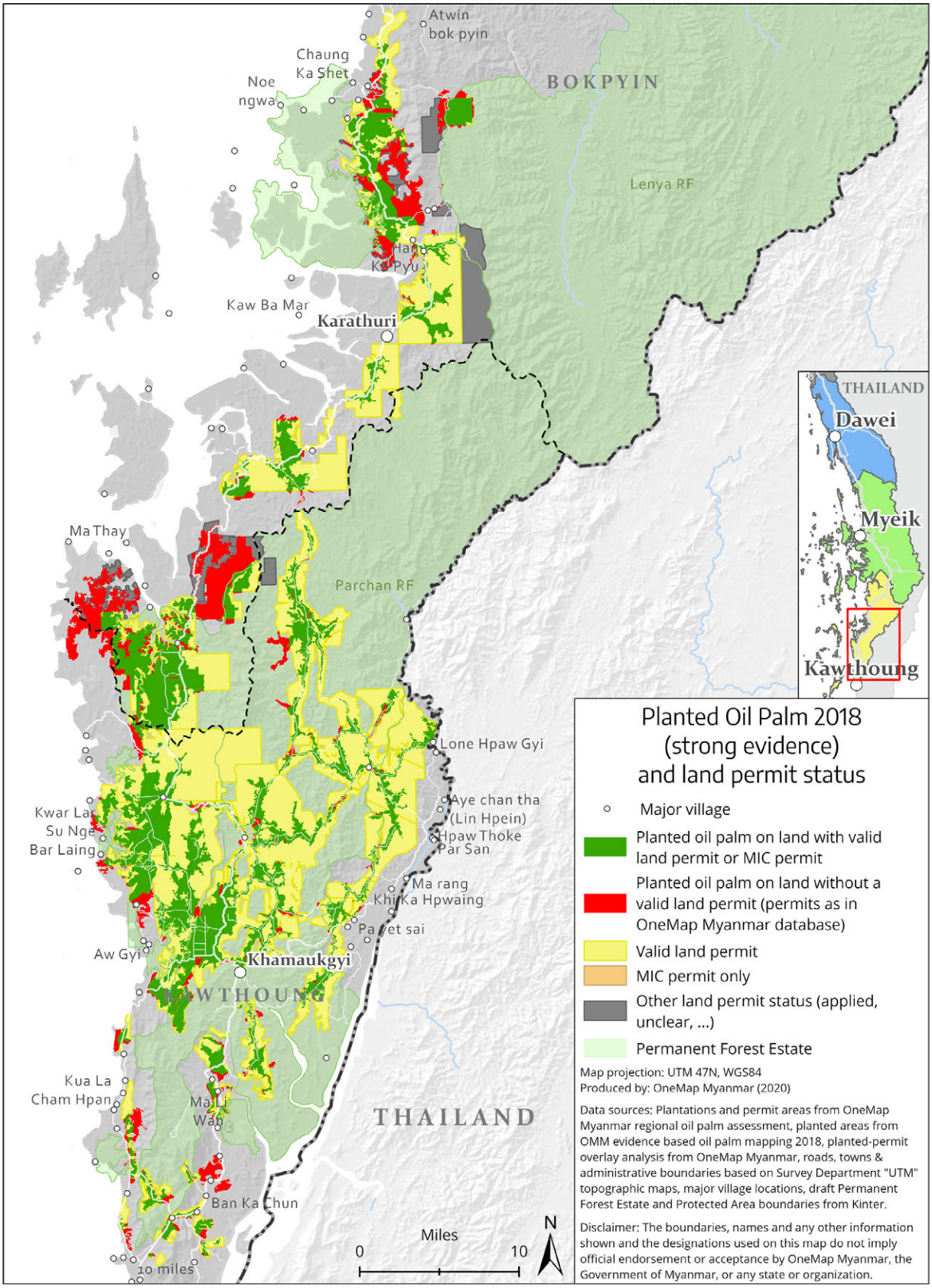


Figure 11:
Planting / permit status in southern Tanintharyi

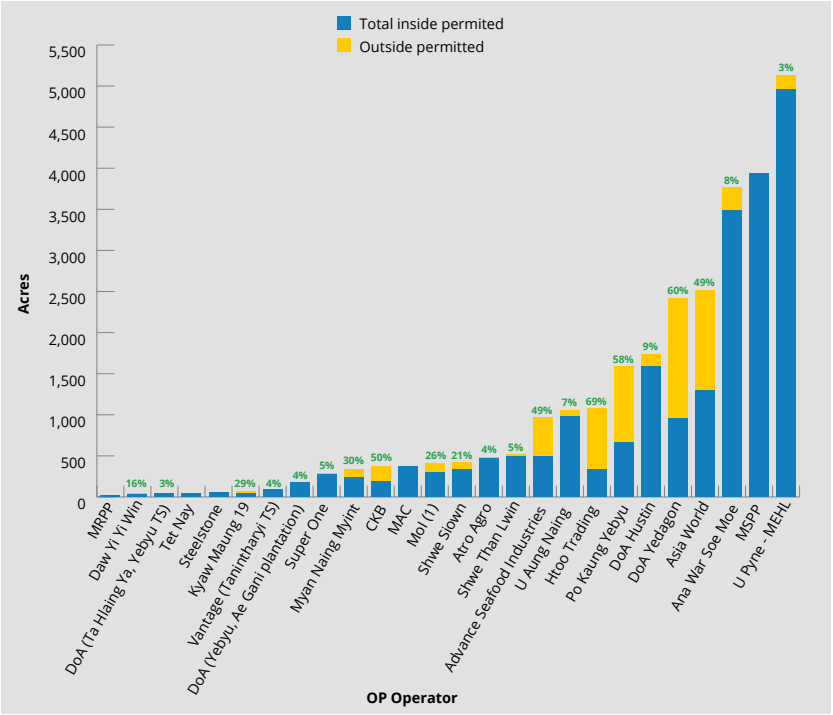


Figure 12:
Plantings inside and outside of permit boundaries (less than 6,000 acres)

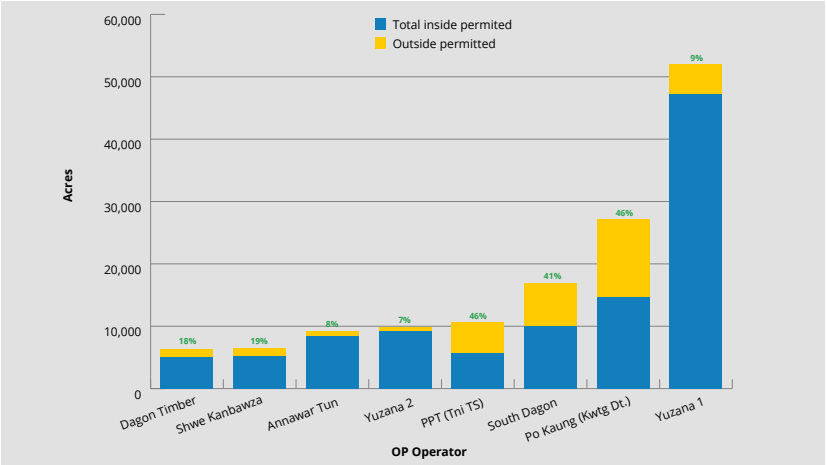


Figure 13:
Plantings inside and outside of permit boundaries (more than 6,000 acres)

While Figure 11 presents a geographic summary of all plantings outside permit boundaries, it is also important to understand how specific operations were found to be complying with their permits. Figures 12 and 13, above, display the rate of plantations inside and outside of each of the 34 plantation operations. The percentage values represent the proportion of the plantation found to be planted outside permit boundaries. For simplicity, the graphs have been separated between those with less or more than 6,000 acres of planted oil palm.

As shown in Figures 12 and 13 many operations were found to have planted approximately half, and in some cases more than half, of their oil palm outside permit boundaries. While not dismissing the significance of these potential violations of permits, the larger operations represented in Figure 12 are perhaps more concerning. Here, we can observe 3 operations found to have more than 40% of plantings outside permit boundaries. Given the size of the total plantation, these areas are significant areas of land (4,800; 6,900 and 12,400 acres respectively). Additionally, the Yuzana plantation has only 9% of the area planted outside permit boundaries, but this represents approximately 4,800 acres. As noted above, further investigation is recommended to understand the reasons why operators are planting outside of permit boundaries, so that necessary steps can be taken to resolve the issue.

4.4 Community customary tenure and other land use inside permit areas

Understanding and documenting community land use is a time consuming and resource-intensive process that requires a large-scale ground survey of village-based livelihoods. Conducting such a process across all 50 plantations was beyond the scope of this assessment. However in 2017, at the beginning of this assessment, the OneMap Myanmar project supported a multi-stakeholder group of villagers, plantation owners, civil society representatives and local government officials to undertake a detailed field survey across one plantation in Yebyu Township to document and map community land use and various associated land conflicts. The findings of that field survey highlight how community land use, often operating under customary tenure arrangements, can be impacted by the allocation of oil palm and present inside idle oil palm permit areas.

The field survey, conducted in March 2017, assessed how villagers used land inside the permit boundaries of the Daw Yi Yi Win plantation in Yebyu Township. Through this process, areas of village and plantation company land use within permit boundaries were mapped and the areas calculated therein. The Daw Yi Yi Win plantation is under a VFV permit that was originally issued in 1999 and by March 2017 it had been in operation for 17 years. Despite this, the field survey found that only a small area of land inside the permit area had been planted with oil palm. A total of approximately 37 acres, or just over 7% of the total permit area as identified by the survey team, with another 23 acres identified as having "possibly" been previously planted with oil palm but where the plantation had become overgrown or died. The field survey also found that the plantation owner had planted other crops inside the permitted area, including rubber, betel nut, banana and sugar cane (FSWG, 2017). In total, the plantation owner was found to be using approximately 319 acres of land or just over 63% of the total permit area, with only a limited area used for oil palm.

The field survey further identified and mapped the farmland of 22 individual farmers from 4 neighbouring villages who were farming a variety of crops, predominantly cashew, but also betel nut, rubber banana and sugar cane in smallholder plots across the permit area. Altogether, these smallholder farmers occupied another 125 acres of land or approximately 25% of the permit area, all of them were operating under informal, or 'customary', arrangements. The spatial mapping of the current land use of both the plantation operator and community plantings from the field survey are presented at Figure 14, below.

In addition to the current land use in plantation areas, the field survey also documented villagers claims of the loss of their traditional lands when the land was originally acquired by the plantation owner. According to a brief history of the neighbouring villages outlined in the survey, the plantation occupied the traditional lands of Kyae Zuu Taw village, and although the village had faced many hardships in terms of displacement from war, there is a desire by the village to have access to their traditional lands which they claimed had been taken by the plantation (Ibid: Section 9.10).

While this detailed assessment is from just one plantation operation among 50, there are likely to be many other cases where village land use can be found within plantation permit boundaries. This is particularly so, given the both formal and informal reports of land conflicts around other oil palm plantations (ALARM et.al., 2018; Tarkapaw et.al., 2016; Lundsgaard-Hansen, 2018; Naw Betty Han, 2017).

The presence of large areas of village land use within the small permit area of the Daw Yi Yi Win plantation highlights a central dilemma for policy makers, investors and communities. The question is how to reconcile large scale agricultural land acquisition with traditional, informal notions of village land and natural resource use. Given the current gaps in the legal framework in the recognition of customary and communal tenure, there is a heightened risk

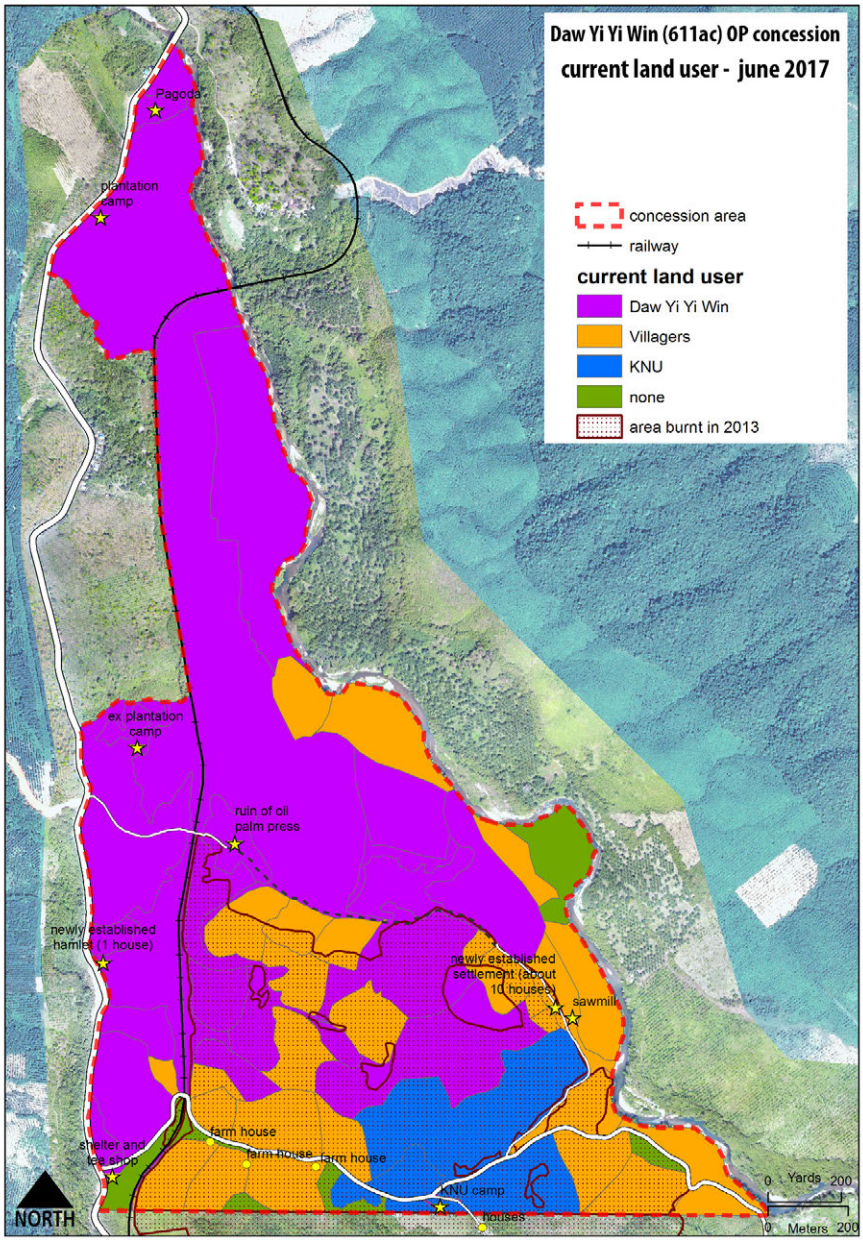


Figure 14:
Village land use inside Daw Yi Yi Win oil palm permit area
Source: FSWG, (2017)

that large-scale land acquisitions will impact surrounding communities where there is no formal recognition of broader community land areas. In light of the 2016 National Land Use Policy (NLUP), and the recent 2018 amendment to the VFV Law (both of which recognise the existence of customarily managed lands and forests) there is a need to ensure that large-scale agribusiness operations do not negatively impact communities by acquiring land and resources they have relied on for generations. This issue is explored further in the discussion section of this report (see Section 5.6).

4.5 Oil palm as a driver of deforestation

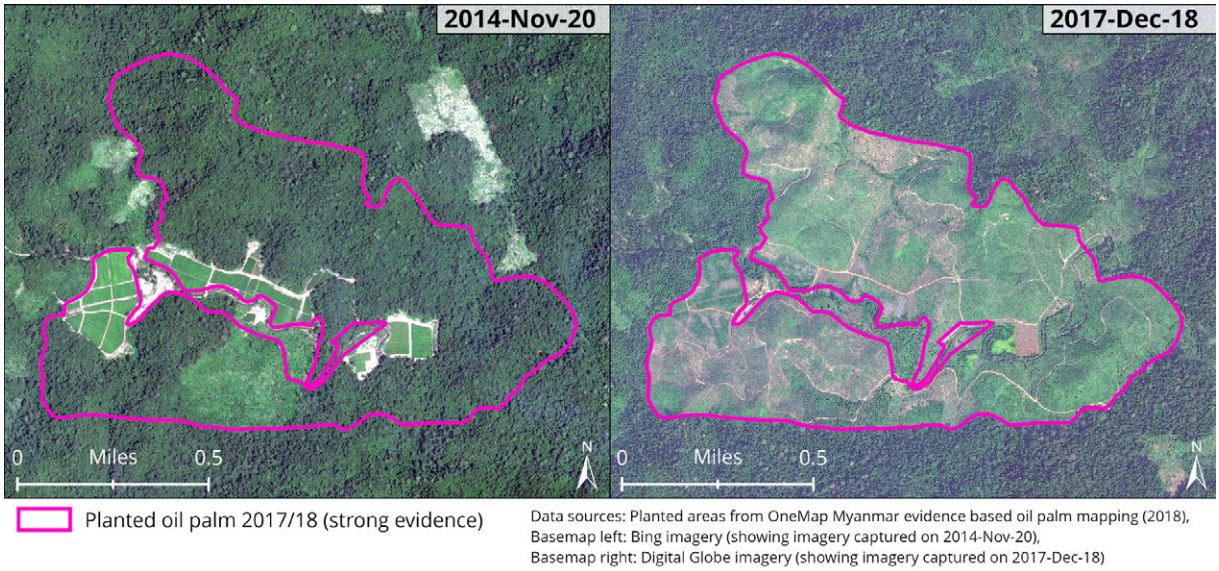


Figure 15:
Before and after: Deforestation captured on satellite imagery

In South East Asia and around the world, large-scale industrial tree plantations are often identified as a major cause of deforestation. For example, in Indonesia and Malaysia, oil palm plantations are reportedly a major driver of deforestation (Schrier-Uijl, 2013; Guardian, 2020). Similar concerns exist around the oil palm sector in Myanmar. A report published by ALARM and other Tanintharyi CSOs claims that one plantation alone has resulted in the loss of 16,000 acres of forest in Bokpyin Township (ALARM et.al., 2018, pp. 15-17).

In light of these concerns, the assessment team undertook a simple analysis of deforestation based on available remote sensing historical forest cover data. The 'strong evidence of oil palm' and 'company sketch mapping' datasets were both measured against scientific forest cover data from 2000 (Leimgruber et.al., 2015) to understand the effects of large-scale oil palm plantation development on deforestation. A visual representation of the findings is shown in Figure 16, below. Forest loss based on the 'strong evidence of oil palm' dataset is shown in red, while forest loss based on company sketch maps is shown in yellow.

It is not possible to claim with complete certainty that deforestation is a direct result of oil palm plantations, as forest could have been cleared before the land was acquired by plantation operators. However, the data represented in Figure 16 strongly supports the theory that there is a link between deforestation and oil palm plantations in Tanintharyi Region. As shown, deforestation is concentrated in the southern plantation zone around Bokpyin and Kawthaung townships. The analysis shows that oil palm plantations have likely resulted in the loss of between 118,000 and 152,500 acres of forest since 2000. It should also be noted that of deforestation rates may also be higher than this analysis has found, because there were large areas of land cleared in southern Kawthaung Township prior to 2000.

Table 12: Probable deforestation resulting from oil palm since 2000

Dataset	Area of deforestation (acres)
Dataset A – Company sketch mapping	152,500
Dataset B – Strong evidence of oil palm	118,000

Note: GIS analysis by OneMap Myanmar

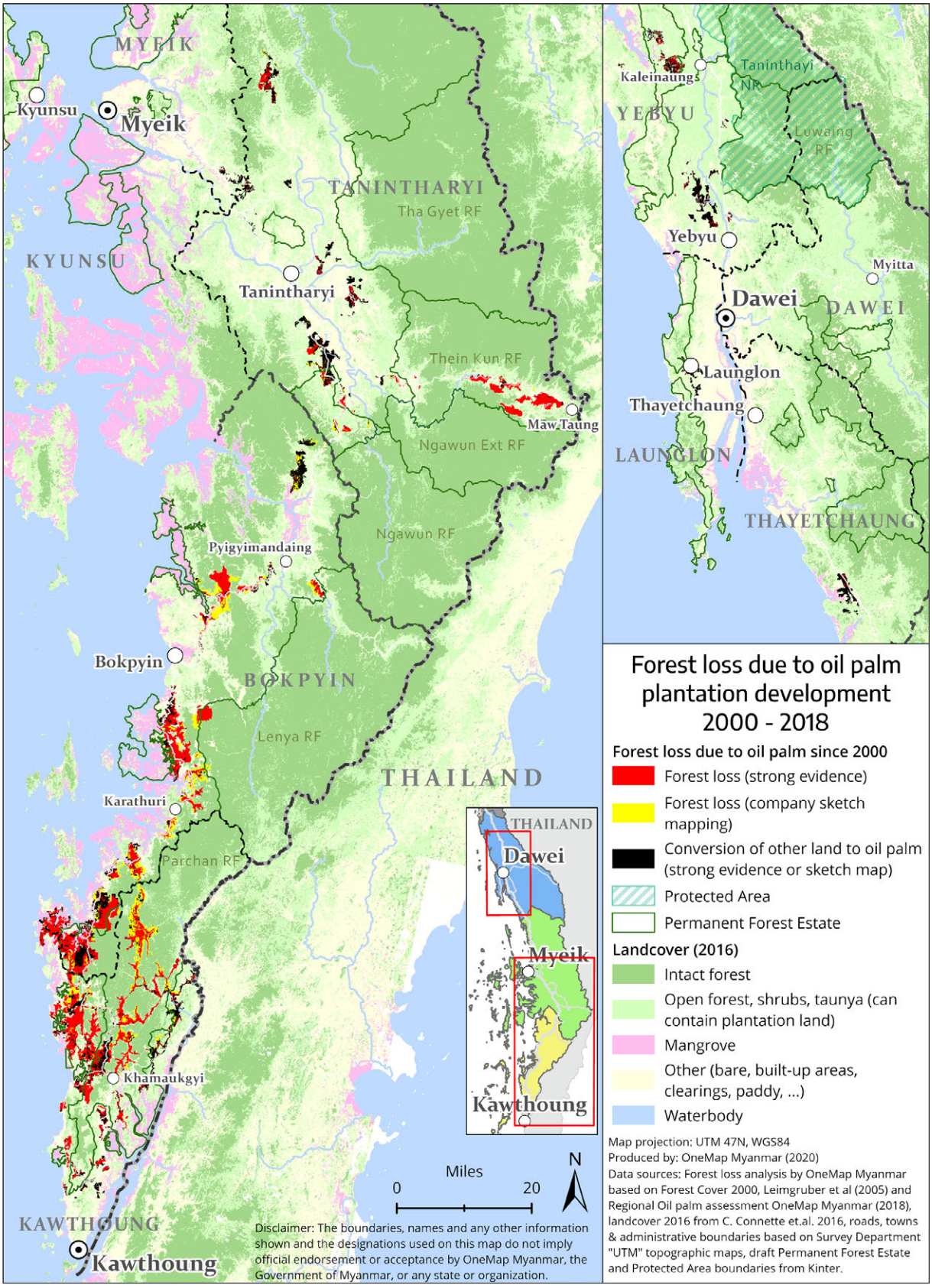


Figure 16:
Deforestation from oil palm since 2000

4.5.1 Risks to intact forest from existing permits

In addition to an analysis of deforestation since 2000, the assessment team studied how current permits may impact intact forest. Figure 17, below, is based on forest cover data from 2018 (Connette et.al. 2018) and areas identified as intact forest found within permits areas for oil palm plantations. The map shows where areas of intact forest (red) and mangroves (purple) are located inside existing land permits (including MIC permits) as at July 2019. Table 13, below, summarises the approximate total area of intact forest and mangroves that are located inside existing land permits according to this assessment.

Table 13: Land Cover classes inside current permits

Land cover data inside permits	Area (acres)
Intact forest	241,300
Mangroves	23,191

Note: GIS analysis by OneMap Myanmar

Based on these findings, it is recommended that the Government of Myanmar review all oil palm permits in areas of intact forest. This would align with the government's commitments under the Aichi Targets of the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change (UNFCCC) to achieve zero net deforestation. To meet these commitments, efforts must also be made to preserve existing areas of intact forest. As shown in Figure 17, below, the threat to current intact forest could be significant reduced through a review of only a small number of permits, particularly the MIC permits in northern Bokpyin Township.

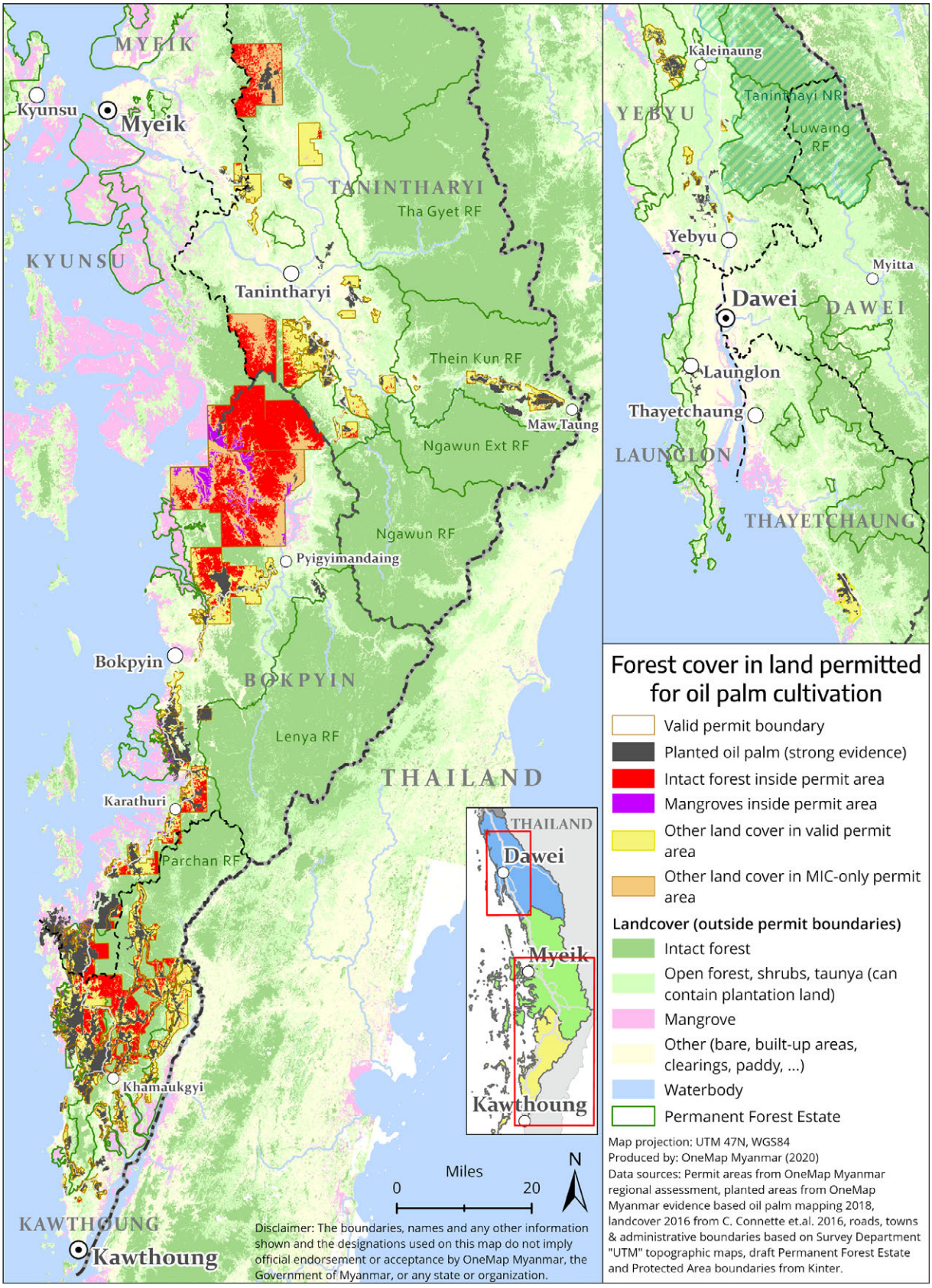


Figure 17:
Intact forest in oil palm permit areas

5. Discussion

The following section explores 6 key issues that have emerged from this assessment. Some of these issues relate to the methodology and challenges faced in undertaking this assessment, particularly as it relates to the digitisation of permit data and remote sensing of planted areas. As a result of the various methodological limitations highlighted here, and throughout the report, it is recommended that the reader consider the acreage values presented as approximations rather than strict measurements.

Importantly, the challenges faced in conducting this assessment and accessing relevant documentation have informed a series of recommendations to improve oversight and management of the oil palm sector and other agribusiness land leases and concessions. It is hoped that these recommendations will generate further discussion, both in Tanintharyi Region and at a national level. These discussions are particularly important as progress is made towards the development of a national land law, as recommended by the 2016 National Land Use Policy.

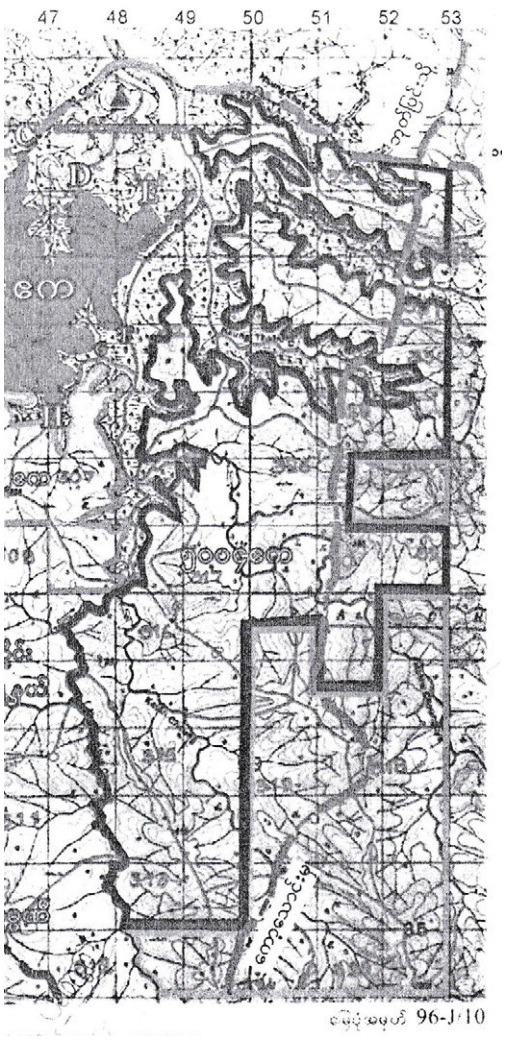


Figure 18:
Imprecision in permit boundary maps

5.1 Challenges and limitations digitising land permit boundaries

This assessment found 6 permit types in use for granting legal land tenure and permission to plant oil palm. The large number and types of permits, in part, reflects how regulatory authorities have changed over the last two to three decades. However, in recent years, permits for agribusiness ventures, such as oil palm, have primarily been issued by two departments: DALMS and the Forest Department. These permits are issued in hard copy and, typically, they are not digitised or integrated into a computerised database. As outlined above, this assessment sought to digitise permits using GIS software to enable geo-spatial analysis of plantations.

No official permit maps were available for approximately 20% of permits and a 'best-available alternative map'[13] was used as a reference. In these cases, there was a higher margin of error for demarcating permit boundaries. In other cases, there were no permitted area reference maps available and it was not possible to qualify the size and location of the land permits. In total, out of 50 identified plantation operations, the assessment did not obtain any permit data for 7 operations by September 2020. Efforts are ongoing to obtain these documents and update relevant data in the digital database.

13. Such maps included maps to report planted areas, maps used to apply for a land permit, etc.

For each plantation operation, all land permit documents were scrutinised and only those which had been validated were scanned and geo-referenced. Based on the geo-referenced map scans, the assessment team digitised boundaries for 184 distinct permit areas in the oil palm database.

However, there were various challenges in determining the precise location of permit boundaries. For example, the low quality of many permit maps. As can be shown at Figure 18, above, the small scale of the map and the thickness of the boundary line of the permit area make it impossible to provide ground level precision on permit boundaries. Furthermore, many permits have been drawn using outdated and inaccurate colonial-era 'one-inch' topographic base-maps. Most of the one-inch base maps were developed in the 1940s using antiquated surveying technology and have resulted in numerous inaccuracies (Oswald et.al. 2019). Such inaccuracies are apparent also in this report, as many of the permits digitised as part of the assessment were based on one-inch base maps. There is an urgent need to clarify all permit boundaries with a higher degree of accuracy than what is currently available using a set of standard operating procedures. Despite the imprecision of permit boundaries, the digitised permit maps provide a general overview of permit areas and have informed this macro-level analysis of the sector. As noted above, it is important that these geo-referenced boundaries and maps included in this report are not used to legally determine a plantation boundary in any land-related conflicts.

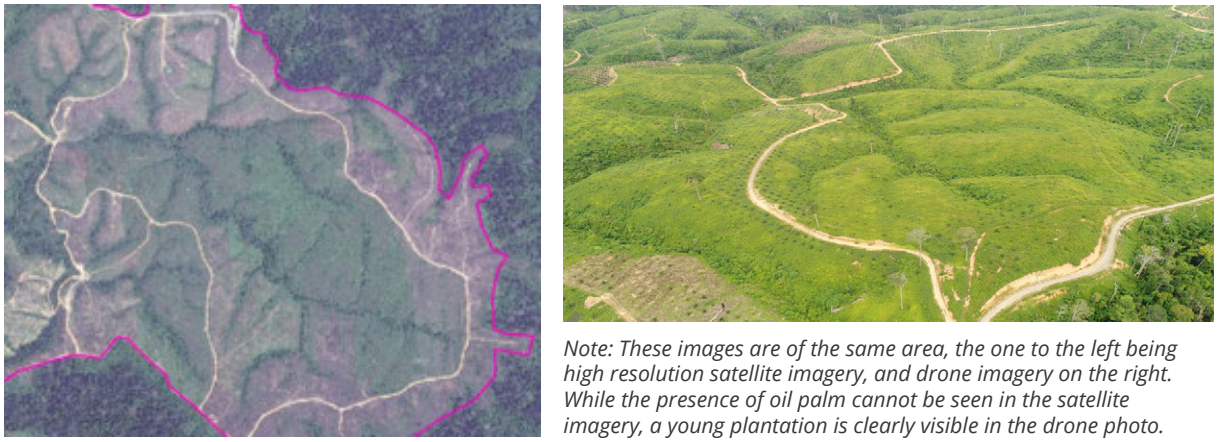
5.2 Challenges identifying planted oil palm through satellite imagery

As part of this assessment, planted areas were identified to support a larger macro-level analysis of the oil palm sector across Tanintharyi Region. The aim was not to formally demarcate areas and, as with permit boundaries, the data should not be used as evidence in any legal dispute. In many countries, mapping planted areas in oil palm plantations is a standardised process that uses up-to-date, high-resolution satellite or drone imagery. For example, in Indonesia and Malaysia, oil palm companies regularly undertake such mapping as an essential part of plantation management. In Tanintharyi, this was not found to be the case and identification of planted areas became the most challenging aspect of this assessment. This was due to conflicting views of where, and how much, oil palm has been planted. To acknowledge these variations, this assessment developed 4 datasets, as shown at Table 1 and referenced throughout this report, in addition to the DoA planted area data.

Once company sketch map data was digitised, the assessment team undertook a manual exercise of visually identifying each plantation area using these sketch maps as a guide. Using 0.5m high-resolution satellite imagery, the assessment team examined imagery both inside and outside the identified sketch map areas for visual evidence of planted oil palm. However, using this imagery, evidence of oil palm was located across only 84% of the areas in company sketch maps (180,000 acres from 215,500 acres). There are many possible reasons for this, including:

- Lack of maintenance of the plantation resulting in bamboo or even forest regrowth or overgrowth;
- Forest having been cleared but never planted;
- Newly cleared and planted areas not able to be visualised in satellite imagery;
- lantations having been cut after planting and other land use undertaken; and
- Possibility of mistaken claims by plantation managers, in areas where plantations have not ever been planted.

While, in a small number of cases, it was possible to address some of these issues, for example through ground-truthing and drone imagery, it was beyond the scope of this assessment to undertake extensive ground-truthing. Figure 19 below provides a clear example of the limitations of satellite imagery as a means to identify newly planted oil palm areas.



Note: These images are of the same area, the one to the left being high resolution satellite imagery, and drone imagery on the right. While the presence of oil palm cannot be seen in the satellite imagery, a young plantation is clearly visible in the drone photo.

Figure 19:
Viewing plantations through satellite and drone imagery

Source: Oswald, 2019

Figure 20:
Immature oil palm in overgrown forest (highlighed in yellow circles)

Another challenge in identifying oil palm is when planted areas have, subsequently, become overgrown due to a failure to manage the plantation and remove secondary forest regrowth. Figure 20, below, is striking, as although oil palm saplings can be seen, the extent of the forest regrowth makes the plantation unviable. Not only is the sapling completely hidden from satellite imagery, but it will also likely die under such conditions. While we can also see evidence of oil palm trees in Figure 20, also shows oil palm crowded out by large bamboo thickets and secondary forest regrowth. It is highly likely that it would not be possible to see evidence of oil palm from satellite imagery of this area.

At the time of publication, there are various processes underway in Tanintharyi Region to determine the location of all oil palm plantations, reportedly involving civil society and government actors. The OneMap Myanmar project has been asked to participate in some of these processes. Based on the understanding of the assessment team, the processes aim to determine the legality of the plantations, based on whether plantings are evident on the ground.

However, the issue of overgrown plantations raises the question: Should overgrown areas be considered as "planted with oil palm", thereby giving them the 'legality' these processes desire, or should such areas be considered as unmanaged or abandoned plantations? Are plantation operations that fail to manage plantations in this manner in violation of their permit, and should such areas be 'returned' to community or state control? These are all questions that will need to be answered going forward as the government, civil society and communities of Tanintharyi attempt to address the various challenges brought by the oil palm sector.

A final limitation on using satellite imagery to identify plantations is that it often fails to identify smallholder oil palm plantations. It is possible that smallholder operations exist within permit boundaries and, therefore, oil palm plantings could be overstated in this assessment. The assessment team was notified of one example within the SKBZ plantation, where a community member who had a smallholder plantation of oil palm, was concerned that his crop would be mistakenly registered as SKBZ plantation area. Such areas are likely to be relatively small and can only be adequately identified through extensive ground-truthing, which was beyond the scope of this assessment.

5.3 Improving governmental monitoring and oversight of land permits

One of the most significant challenges in undertaking this assessment is the absence of a centralised system to manage agribusiness permits, either nationally, or at the Tanintharyi Region level. In light of this, the regional government issued a notification authorising the assessment team to obtain all land permits related to oil palm plantations. Following the release of this notification, the assessment team engaged township offices directly. However, while township offices were, in most cases, willing to provide copies of permits, the assessment team was not able to obtain all relevant permits due to various reasons such as:

- Confusion over whether the permit was held at regional or township level;
- Loss of permit (particularly for older permits);
- Information from township officials that certain permits or operations were no longer valid (these were then not utilised in the assessment);
- Lack of clarity around the process of cancelling a permit; and
- The unwillingness of some offices to provide copies of permits due to sensitivity.

The lack of centralised management is further complicated by, firstly, the shared jurisdictional oversight between DALMS and the Forest Department and, secondly, the fact that documents are generally managed by local township offices. To date, no attempt has been made to digitise or centralise data relating to land permits. Although, promising attempts have recently been made by DALMS, the data is not publicly available and was not shared with the assessment team. This fragmented and decentralised approach means that policy makers, researchers and the broader public do not have an overview of the extent to which oil palm permits have been allocated, to whom and where.

A centralised, digital and accessible database would significantly increase transparency around large scale oil palm plantations. It is recommended that this database also incorporates mechanisms to add, amend and remove permits and permit areas. Currently, there is no systematic way to determine whether permits have been cancelled.

5.4 Standards and protocol for permit modification and revocation

As mentioned previously, there was little clarity around how land permits are amended or revoked. It was extremely difficult for the assessment team to obtain official documentation relating to the cancellation of oil palm permits and permit areas. In many cases, verbal

assurances from township or district officials that certain permits had been discontinued were relied upon and permits were not included in this assessment only on this basis. It was very difficult for the assessment team to determine what, if any, procedures were in place regarding amendments of land permits and it appeared to be equally unclear which government department should be responsible for the issuance of such permits.

A standardised process should be implemented to formally revoke or amend land permits, as this would ensure there is an official, documented record of previously issued land tenure documents. It is recommended that this information, once consolidated, is also shared publicly.

5.5 Conversion of VFV permits to Form 7 land use certificates

While a review of the legal mechanisms was outside the scope of this assessment, some concerning trends relating were identified relating to how land permits for oil palm were issued that should be considered in ongoing reform processes. Currently, the VFV Law is the primary legal mechanism by which DALMS issues land permits to oil palm and other agribusiness concessions on areas outside of the permanent forest estate. However, under Article 46 of the by-laws to the 2012 Farmland Law, investors may convert land classified as 'VFV' land into farmland, once the production on the land becomes "stable".[14] Articles 43-45 of the by-laws establish a procedure whereby the township Farmland Administration Board "Shall issue the certificate of farmland use right (Form 7) to the applicant reclassifying the vacant, fallow and virgin land into farmland."

While only 5 oil palm operations were found to have been currently using Form 7 land use certificates to establish plantations, and all were state-owned, interviews indicated some large-scale investors are seeking to acquire permanent land tenure rights by converting VFV permits into Form 7 land use certificates. Arguably, mechanisms to convert VFV permits into permanent tenure may be appropriate for small scale farmers who typically need to register their land under the VFV Law. However, providing large-scale agribusiness investors with the opportunity to acquire permanent land use rights (and a significant reduction in land tax payments) to large areas of farmland would appear to be a loophole that needs closing, perhaps through the enactment of specific legislation aimed at regulating large-scale agribusiness investments. At the time of writing, the bylaws of the amended Farmland Law were in a governmental drafting process and was is unclear whether the same provisions will be provided in the updated by-laws.

5.6 Customary lands and community land use in oil palm permit areas

The impacts of large-scale agribusiness on community land use, particularly under customary tenure, is a significant issue in many countries. In many Least Developed Countries (LDC), and middle income countries, large-scale agribusiness is cited as a cause of land conflicts with local, often ethnic minority or indigenous, communities, whose traditional land and forest management practices are often not recognised in law. In Myanmar, customary tenure is not adequately recognised or protected in law, nor in regulations pertaining to agribusiness investments. This is in spite of express directions to recognise and protect customary tenure in the 2016 NLUP. This creates a risk that land acquisition for agribusiness investments may occupy land and forest areas that rural and ethnic communities rely on for their livelihoods. The loss of land and associated livelihoods can have a significant, negative impact on people's health and wellbeing. Already, there is a growing body of evidence that such impacts are being felt be communities in Tanintharyi.

14. Article 46. of the 2012 Farmland Law by-laws state: "With the approval of the Central Farmland Administrative Body, the vacant, fallow and virgin land which has been approved to the investors or the organisation of investors under the Foreign Investment Law shall be re-classified to farmland when the production on that vacant, fallow and virgin land becomes stable."

As mentioned earlier in this report, conflicts have been formally documented between oil palm operators and villagers across Tanintharyi Region (Tarkapaw et.al., 2016; FSWG, 2017; ALARM et.al., 2018; Lundsgaard-Hansen, 2018). In 2017, civil society groups and community leaders in Myeik Township submitted a complaint to the Malaysian National Human Rights Council regarding one Malaysian backed oil palm plantation in Tanintharyi. The complaint stated that 4,480 local villagers were facing difficulties after the confiscation of 6,000 acres of their lands by the oil palm company (MNHRC, 2017 p.13). Looking at these reports, community land use has been found inside the permit areas of both large and small plantations across different townships in Tanintharyi. Loss of land may be in the form of the loss of permanent farmland held customarily, or traditional forms of rotational agriculture than incorporates fallowing as a traditional land management technique. Loss of forest land can also impact forest dependent people whose livelihoods rely on the sustainable utilisation of forest resources, such as collecting bamboo shoots, mushrooms and other important non-timber forest products (TRIPNET, 2018).

Failure to address the issue of community land and forest use in permit boundaries will, almost certainly, lead to continued conflict and mistrust between oil palm plantation operators, communities, government and civil society. Given the scale of current unplanted permit areas, there is a possibility that oil palm plantations in Tanintharyi Region may double or even triple in size. As such, a process is urgently needed to recognise and protect village land and forest use and tenure systems that exist within permit boundaries. Remedying this situation will ultimately require a change to legislation surrounding land and forest governance in Myanmar. The current mechanisms established under the National Land Use Council for the development of an umbrella national land law offer an indication that such reform is on the way. However, the question might be how long will such reform take and how long can the communities of Tanintharyi wait? Given the findings from the FSWG report outlined in Section 4.4, above, and previously mentioned reports on the impacts of oil palm land acquisitions on communities, a more immediate solution to the recognition of community customary land and forest use may need to be found.

One solution might be to review each of the 50 plantation operations to undertake detailed mapping assessments to identify customarily owned land. This process would be similar to the method applied by the Field Survey Working Group in Yebyu Township in early 2017 and detailed in Section 4.4. The major limitation to this approach is the significant amount of time and human and technical resources that would be required. Another possibility might be to consider interim measures, such as incorporating Free Prior Informed Consent (FPIC) processes into any expansion of oil palm, ensuring that neighbouring communities consent. Requiring public EIAs on any areas of land to be newly planted may also be a mechanism whereby potential community impacts are identified and averted before further plantations proceed.

Another possible solution to this complex problem may be to place a moratorium both on the issuance of new permits and the expansion of plantations under existing permits. This pause on expansion of oil palm would provide an opportunity to undertake environmental and social impacts assessments, sector wide assessments and initiate an open dialogue among all stakeholders in Tanintharyi regarding the suitability of large-scale agribusiness as an economic model. Furthermore, it would provide sufficient time for an appropriate land governance framework to be implemented, fully taking into account the unique situation of customary tenure in Myanmar.

6. Conclusion and key recommendations

6.1 Conclusion

This assessment was undertaken to provide the Tanintharyi Regional Government and other stakeholders with an overview of land use related to permits, plantings and management of large-scale oil palm plantations across the region. It must be considered in the context of concerns shared by the community, civil society and government in relation to the expansion of oil palm across the region and the associated environmental and social impacts. As explained in the introduction to this report, it is these concerns that prompted the regional government to request this assessment.

The assessment sought to produce a macro-level overview of the sector, using official permit data and high-resolution satellite imagery from 2017 / 2018 dry season. As explained throughout this report, there are numerous limitations to the data presented. As such, it is a point-in-time assessment that is useful to understand the overall land use related to oil palm, however the results are necessarily imprecise. This data should be interpreted to highlight broad trends across the oil palm sector in Tanintharyi, such as the scale of permits, the levels and methods of plantings and management of plantations. While every effort has been undertaken to ensure robust findings, there may be areas that have since been planted, cleared of overgrowth or have become clearer in more recent imagery. Likewise, there may also be areas that have been cut down, died or become overgrown since the imagery was taken. Planted areas identified are estimates and should not be used to form the basis of the precise location of oil palm or as evidence in any legal disputes over land ownership.

This assessment is a snapshot of a sector that is in a continual state of change. It is recommended that data is collected annually, to provide the Tanintharyi Regional Government, and other stakeholders, with an updated overview of oil palm permits and plantings, that could then be monitored over time. Such a system and practice could serve as a model for monitoring other agribusiness sectors. The OMM project would welcome further discussion regarding the most effective way to support the development and implementation of such a system, if there was interest among all stakeholders.

This report should be read in the context of the changing socio-political contexts and legal frameworks in Myanmar. Many permits were originally granted during the military era when community livelihood concerns were secondary to the focus of reaching the SPDC goals of self-sufficiency in the production of oil palm. However, the legal framework in Myanmar has recently undergone significant reform, particularly in progress towards recognising and protecting customary land and forest use, management and tenure of communities. As highlighted in the discussion section of this report, the 2016 National Land Use Policy unequivocally calls for the recognition and protection of customary land use tenure systems, including both private and communal lands. Meanwhile, Article 30-a(b) of the amended 2018 VFV Law recognises customary tenure in law and states that any land considered to be customary tenure shall not be considered as VFV land. Likewise, Article 7(d) of the recently amended 2018 Forest Law acknowledges customary forests that have been traditionally conserved by local people. These new policy and legal frameworks should be considered in light of ongoing conflicts around the large-scale agribusiness.

This report raises several concerns that should be considered further. Overall, the oil palm sector in Tanintharyi was found to lack systematic monitoring, implementation and management, contributing to a lack of clarity and transparency, particularly around permits. With various departments responsible for different permits, it is was extremely challenging to obtain accurate information. Furthermore, official government planting data that often over-reported planted areas of oil palm. It is recommended that attempts are made to rectify official statistics and incorporate standard operating procedures that accurately reflect the rate of plantings on the ground. Additionally, many plantations were found to be poorly managed, in terms of their rate of planting and compliance with permits, suggesting that operations require more robust monitoring.

The question of what should be defined as an oil palm plantation is a key concern among all stakeholders. In this regard, the assessment developed 3 datasets, described at Table 1.[15] These classifications should inform how the government determines the circumstances in returning unused land. It will be important to gain consensus among all stakeholders as to what level of plantings and management supports an operator's claim that plantation lands are being used efficiently, and what should be considered as unviable. Where plantations are found to be unviable, it is recommended that consideration is given to revoking permits and returning or rehabilitating the land. Processes around reallocating land should be considered in the context of legal reforms that recognise customary land tenure, highlighted above, and principles of free, prior and informed consent (or 'FPIC') should be incorporated. Likewise, many plantation operations were found to be operating outside their permit boundaries, or without a legal right to plant. To uphold the rule of law, consideration should be given for appropriate penalties for such practices.

Critically, the high percentage of land allocated to oil palm plantations across some townships threatens to radically change the landscape of Tanintharyi Region. One of the most significant findings highlighted in this report is the risk that, if all permits identified were to be used for plantations, the scale of oil palm would triple from their current rate. In light of this, and links found between oil palm, land conflicts and deforestation, the Tanintharyi Regional Government should consider implementing a moratorium on all expansion of oil palm. This would provide an opportunity to gain a comprehensive understanding of the impacts of oil palm and to engage in a public dialogue involving CSOs, communities and ethnic armed organisations around the suitability of such land use. Furthermore, in light of the substantial threats to communities and the environment, environmental and social impact processes should be required for all plantation operations and should be conducted openly and transparently. Where conflicts exist between plantation operations and local communities, attempts should be made to understand the underlying causes of these conflicts and ensure that they are resolved. These processes should be conducted in line with the 2016 National Land Use Policy, particularly in recognising customary land tenure rights of local communities.

6.2 Recommendations

Overall, this assessment has found various, outstanding issues regarding oil palm plantations, and found the sector to be weak both in effective management and monitoring. As such, the main recommendation from this report is for the **Tanintharyi Regional Government to improve its management and understanding of the oil palm sector.** This would be an important first step towards reducing the negative impacts of large-scale agribusiness investments on the livelihoods of communities. Other recommendations in support of this are outlined below.

15. These were: (A) *company sketch mapping*; (B) *strong evidence of oil palm*; and (C) *well-managed oil palm plantations*, with the first showing the highest value and the last showing the lowest value. The difference between high and low values is approximately 60,000 acres.

Implement effective monitoring and management systems

Monitoring large-scale agribusiness investments is key to ensuring accountability and minimizing conflicts with local communities. The following recommendations offer guidance on how a more effective system for monitoring oil palm could be established, in light of the need highlighted in this report:

- **Update permit boundaries for oil palm plantations** in close consultation with local communities and civil society and considering the customary lands of local communities.
- **Develop a centrally managed and regularly updated digital database** of all permits and plantings, that provides an accurate overview of all large-scale agribusiness plantations that is accessible to all relevant stakeholders.
- **Amend the process of collecting and updating official reports of total planted areas** so that authorities obtain accurate data on plantings and management of oil palm operations.
- **Hold government agencies accountable for providing accurate data on permits** and introduce processes to support this.
- **Introduce standard operating procedures for the amendment or revocation of land permits** that support greater transparency, consistency and clarity around the status of each permit, including those that have been cancelled.
- **Introduce standard operating procedures to accurately measure the total area of plantations**, to allow decision-makers and the public to have an accurate overview of the sector.
- **Implement systems to monitor the plantings of permit holders to ensure they do not plant outside permit boundaries** and introduce suitable penalties for violation.
- **Increase transparency across the agribusiness sector,** including in the process of updating permit boundaries, and in the issuance and revocation of permits. Through increased transparency, decision-makers, elected representatives and communities will have an overview of the evolving situation regarding permits, and will be better equipped to make informed decisions and address negative impacts of oil palm in the region.

Conduct further research

While this assessment provides a macro-level overview of land use relating to oil palm in Tanintharyi Region, all stakeholders would benefit from further research and analysis into the agribusiness investment more broadly. The following recommendations outline research that could be undertaken to deepen knowledge and understanding of the various challenges and issues faced in the sector, and that would complement the overview provided in this report:

- **Undertake a comprehensive review of the legal and regulatory frameworks governing all aspects of large-scale commercial and state-owned agribusiness investments.** This review should provide concrete recommendations for improved regulatory oversight and legislative reform for governing large-scale agribusiness, including oil palm.
- **Investigate the economic contribution of large-scale agribusinesses enterprises to the national budget,** particularly related to the creation of government revenues, job creation, land taxes and local development initiatives. Importantly, the socio-economic impacts on livelihoods and food security of such investments should also be examined.
- **Research the environmental and social impacts of large-scale agribusiness investments,** both in relation to biodiversity and ecosystem service provisioning, and community livelihoods.

- **Investigate the reasons for various problematic management practices identified in this assessment**, specifically, the low rates of plating, the large areas of unverifiable plantation areas and the reasons for large areas of plantings outside plantation boundaries.

Address regulatory issues

The following recommendations outline how some of the outstanding regulatory issues uncovered in this assessment could be addressed:

- **Monitor and regulate the use of MIC permits to ensure they are not used in place of a land tenure permit.** Laws governing agribusiness investments should be enforced and violations punishable under the law.
- **Ensure that all operations comply** with the requirements of the 2012 Environmental Conservation Law, the 2014 Rules, and the 2015 Environmental Impact Assessment Procedures.
- **Ensure the collection of baseline data relating to environmental and social impacts, to inform comprehensive EIAs.** Ongoing monitoring should ensure that measures to reduce negative impacts are effective.
- **Consider revoking permits that overlap with high value conservation areas.**
- **Implement legal recognition and protection of customary tenure, an urgent need for rural subsistence communities and forest-dependent people.** In the absence of legal protections, interim measures should be developed to ensure that communities are not negatively impacted by large scale land acquisitions. Principles of FPIC are enshrined in the 2016 National Land Use Policy and Article 5 of the 2015 Ethnic Rights Protection Law explicitly state that major projects operating within the areas of ethnic groups shall completely inform, coordinate and perform the project with the local ethnic group. Implementation of these principles would be a positive measure to ensure that communities are protected from any potentially negative impacts from large scale agribusiness plantations.
- **Hold plantation operators accountable to complying with the management plans provided as part of their permits** and consider revoking permits where they fail to do so.
- **Draw on the experience of other countries in regulating large-scale agribusiness** to ensure the protection of community livelihoods and the environment.

Implement a moratorium on expansion of oil palm in Tanintharyi Region

- **Pause the expansion of oil palm plantations** in order to give all parties time to fully understand the sector and address various regulatory inadequacies identified in this assessment and the other subsequent assessments listed above. Such a pause would also be a significant trust-building measure with regard to local communities and civil society organisations in Tanintharyi who have raised numerous concerns over various oil palm operations. It will also provide an opportunity for a comprehensive risk assessment and an open dialogue among stakeholders regarding the approach to large-scale oil palm and other agribusiness investments in Tanintharyi Region.

7. Reference List

ALARM et.al., (2018) *Behind the Oil Palm: Consequences of International Investment in Oil Palm plantations.* Advancing life and Regenerating Motherland; Southern Youth Organisation, Myeik Lawyers Network; Future Light committee, Yangon, March, 2018.

Baskett, J.P.C. (2016) *Myanmar oil palm plantations: A productivity and sustainability review,* Report no. 28 of the Tanintharyi Conservation Programme, a joint initiative of Fauna & Flora International and the Myanmar Forest Department.

CAT., (2018). *Our Forest, Our Life: Protected areas in Tanintharyi Region must respect the rights of indigenous peoples*. Conservation Alliance for Tanintharyi.

DoA., (2018), *Land Acquisition and plantation status of oil palm companies in Tanintharyi Region in the budget year 2018-2019*, Tanintharyi Regional Department of Agriculture. Dawei.

Dunant, B., Kyaw Ye Lynn. (2019). *Dispossessed: the human toll of Myanmar's land crisis.* Frontier. April 8, 2019. [Online article] Available at https://frontiermyanmar.net/en/dispossessed-the-human-toll-of-myanmars-land-crisis [Accessed 30th May, 2020].

FSWG (2017), *Daw Yi Yi Win (Shwe Padonmar) Oil Palm Plantation (611) Acre Field Survey Report*. Field Survey Working Group, Yebyu Township, Tanintharyi Region.

Guardian, The (2020). *Biggest food brands 'failing goals to banish palm oil deforestation': Commitments to phase out deforestation by 2020 are out of reach for many, reports find*, 16 January 2020. The Guardian online, accessed on 23 October, 2020. https://www.theguardian.com/environment/2020/jan/17/biggest-food-brands-failing-goals-to-banish-palm-oil-deforestation

Lundsgaard-Hansen, L., and Nwe Nwe Tun., (2018). *Voices of Land from Southern Myanmar: Kanpauk Oil Palm Estate and Palm Oil Mill Project of Myanmar Economic Holdings Limited*. Voices of Land from Southern Myanmar, Working Paper No. 3. Berne, Switzerland: Centre for Development and Environment (CDE), University of Bern.

Malkamäki, A., D. D Amato, N. Hogarth, M. Kanninen, R. Pirard, A. Toppinen, and W. Zhou. (2018). 'A Systematic Review of the Socio-Economic Impacts of Large-Scale Tree Plantations, Worldwide'. *Global Environmental Change-Human and Policy Dimensions* 53 (2018): 90–103.

Murray Li, Tania. (2014) *Land's End: Capitalist Relations on an Indigenous Frontier*. Durham and London: Duke University Press.

MNHRC., (2017). *2017 Annual Report.* Myanmar National Human Right Commission.

Naw Betty Han (2017). *Malaysian company accused of abuses in Tanintharyi*. Myanmar Times, 24 November, 2017, accessed online at https://www.mmtimes.com/news/malaysian-company-accused-abuses-tanintharyi.html on 12 May 2020.

Nomura, K., et.al. (2019). *Oil Palm Concessions in Southern Myanmar Consist Mostly of Unconverted Forest*. Scientific Reports 9, no. 1 (August 15, 2019): 11931. https://doi.org/10.1038/s41598-019-48443-3.

Oswald, P., Nay Lin Tun, Kyaw Naing Win., (2019), Methodology and Data Models for Improved Permanent Forest Estate Boundaries in 1:50,000 scale - Draft. OneMap Myanmar. Naypyitaw.

Oswald, P. (2019). Shwe Kambawza Oil Palm Plantation Study: Estimation of planted areas in support for the District Level Special Supervision Task Force. OneMap Myanmar. Yangon, April, 2019.

Oberndorf, R. (2012). Legal Review of the recently enacted Farmland Law and Vacant Fallow and Virgin Lands Management Law: Improving the legal & Policy frameworks relating to land management in Myanmar. Food Security Working Group – Land Core Group. Yangon.

RSPO., (2019), *RSPO Independent smallholder standard document for public consultation*. 10 April, Roundtable on Sustainable Palm Oil, accessed online 20 April, 2020. https://rspo.org/uploads/default/library/smallholders-documents/rspo-smallholder-standard-draft-text/RSPO_ISH_Standard_April2019_Final_For%20Public%20Consultation.pdf

Spectrum (2015). 'Form 7' Seven case studies of farmland registration in Kachin State. Spectrum – Sustainable Development Knowledge Network, Yangon.

Schrier-Uijl, A.P., M. Silvius, F. Parish, S. Rosediana, and G. Anshari. (2013). *Environmental and Social Impacts of Oil Palm Cultivation on Tropical Peat - a Scientific Review*. Reports from the Technical Panels of the 2nd Greenhouse Gas Working Group of the Roundtable on Sustainable Palm Oil (RSPO). Roundtable on Sustainable Palm Oil, November 2013.

Tarkapaw et al., (2016). *Green Deserts: Communities in Tanintharyi renounce the MSPP Oil Palm Concession.*

TRIPNET (2018). Growing Up Together With the Forest: the unique relationship between the forest and indigenous Karen people of Kamoethway. Tanintharyi River and Indigenous People Network. Dawei.

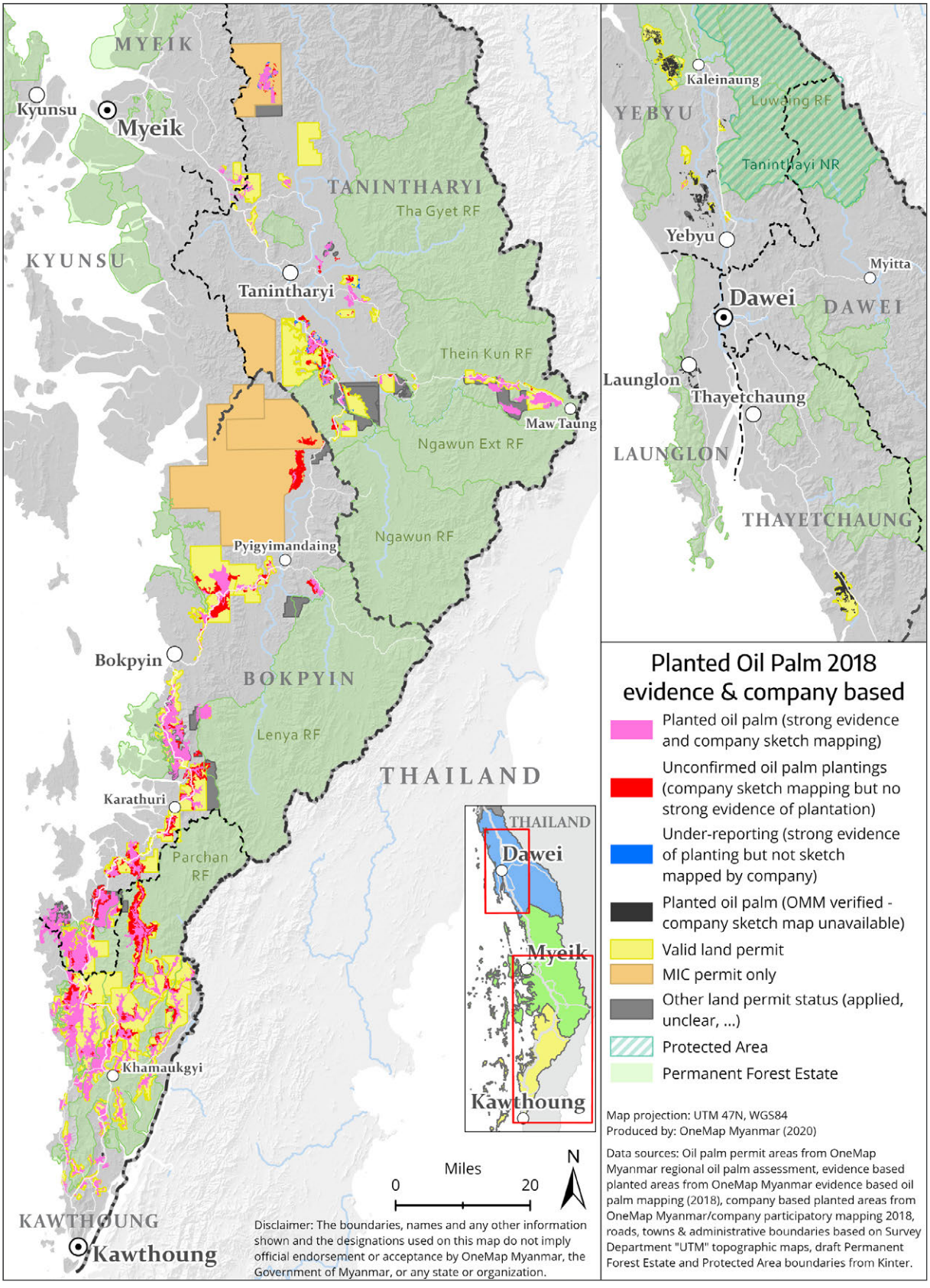
Woods, K., (2015). Commercial Agriculture Expansion in Myanmar: Links to Deforestation, Conversion Timber, and Land Conflicts. Forest Trends, Washington D.C.

Woods, K., (2019). 'Green Territoriality: Conservation as State Territorialization in a Resource Frontier'. *Human Ecology* 47, no. 2 (1 April): 217–32. https://doi.org/10.1007/s10745-019-0063-x.

Appendices

Appendix 1: Example of company sketch mapping of oil palm plantations on high resolution satellite imagery

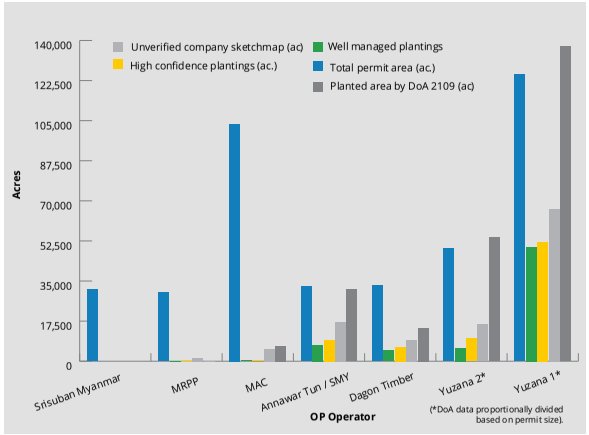
Appendix 2: Permits and assessed 'strong evidence of oil palm' against company sketch mapping that was not verified



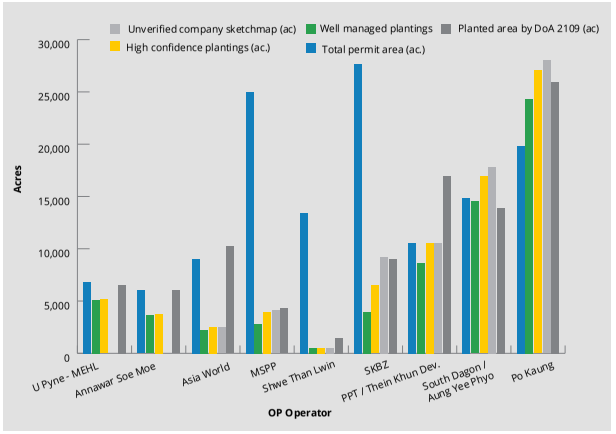
**Note that MIC permits do not specify that the entire area can be cleared but rather only up to the maximum amount stipulated in the contract.*

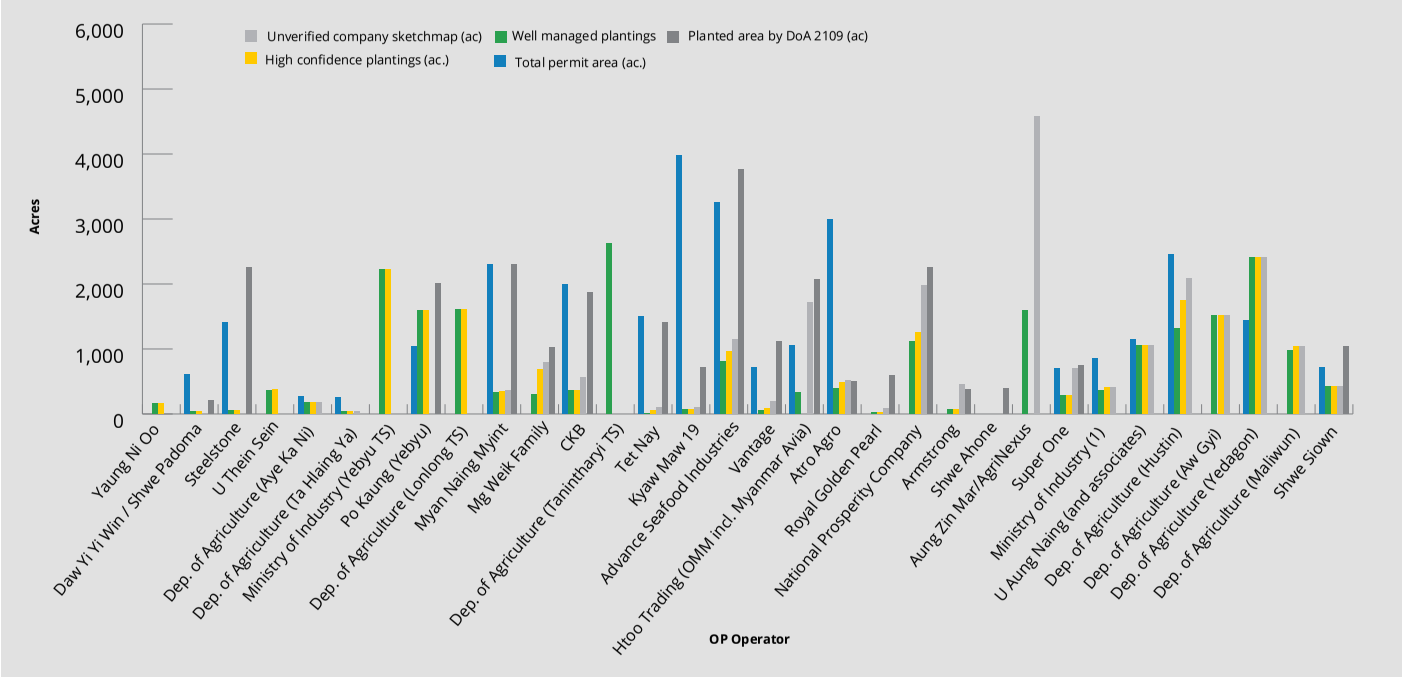
Appendix 3: Graphing company planting against total permits

Plantings by company (large sized permit area – greater than 30,000 acres)



Plantings by company (medium sized permit area 6,000-30,000 acres)



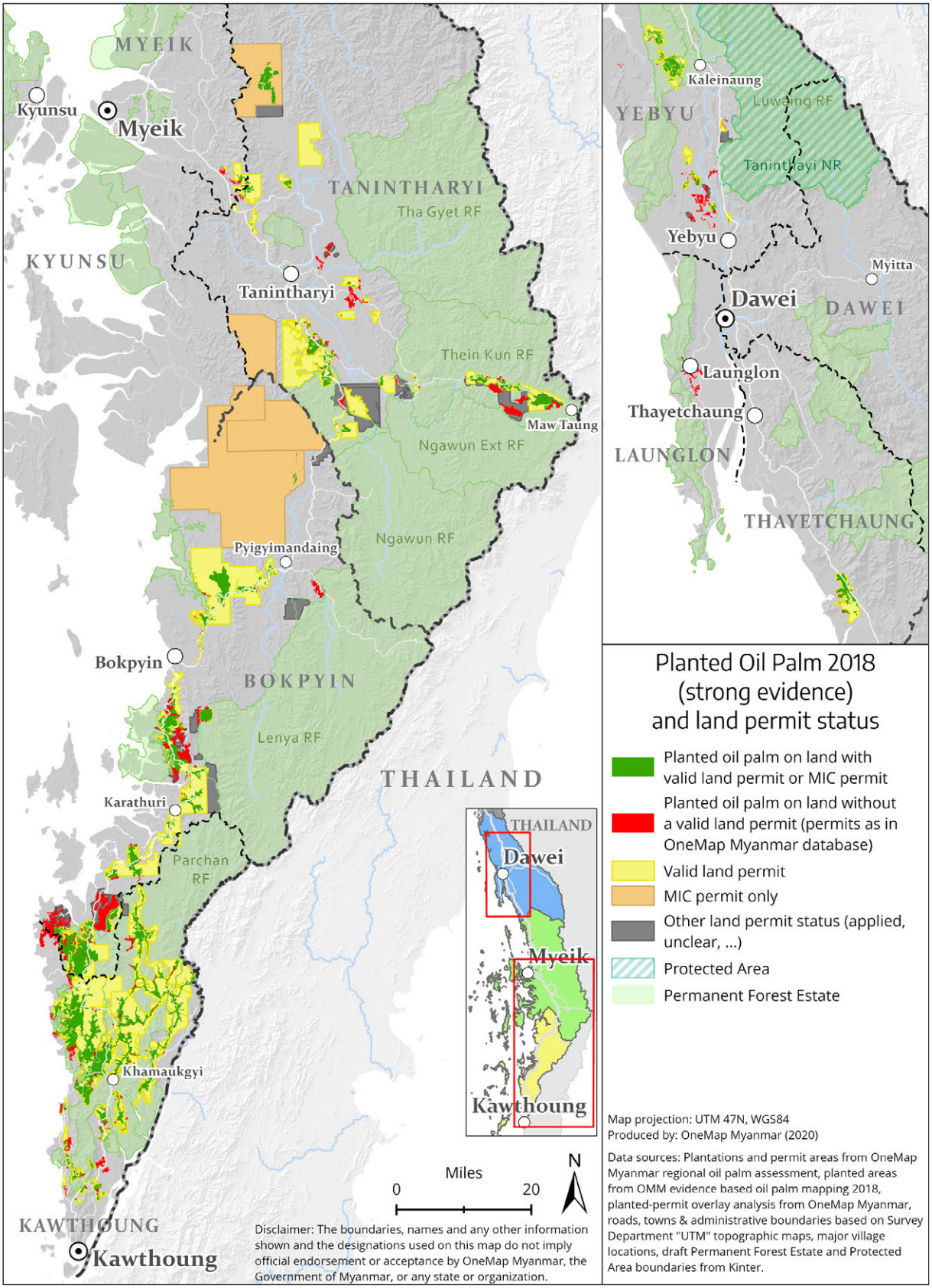


*DoA data proportionally divided based on permit size).

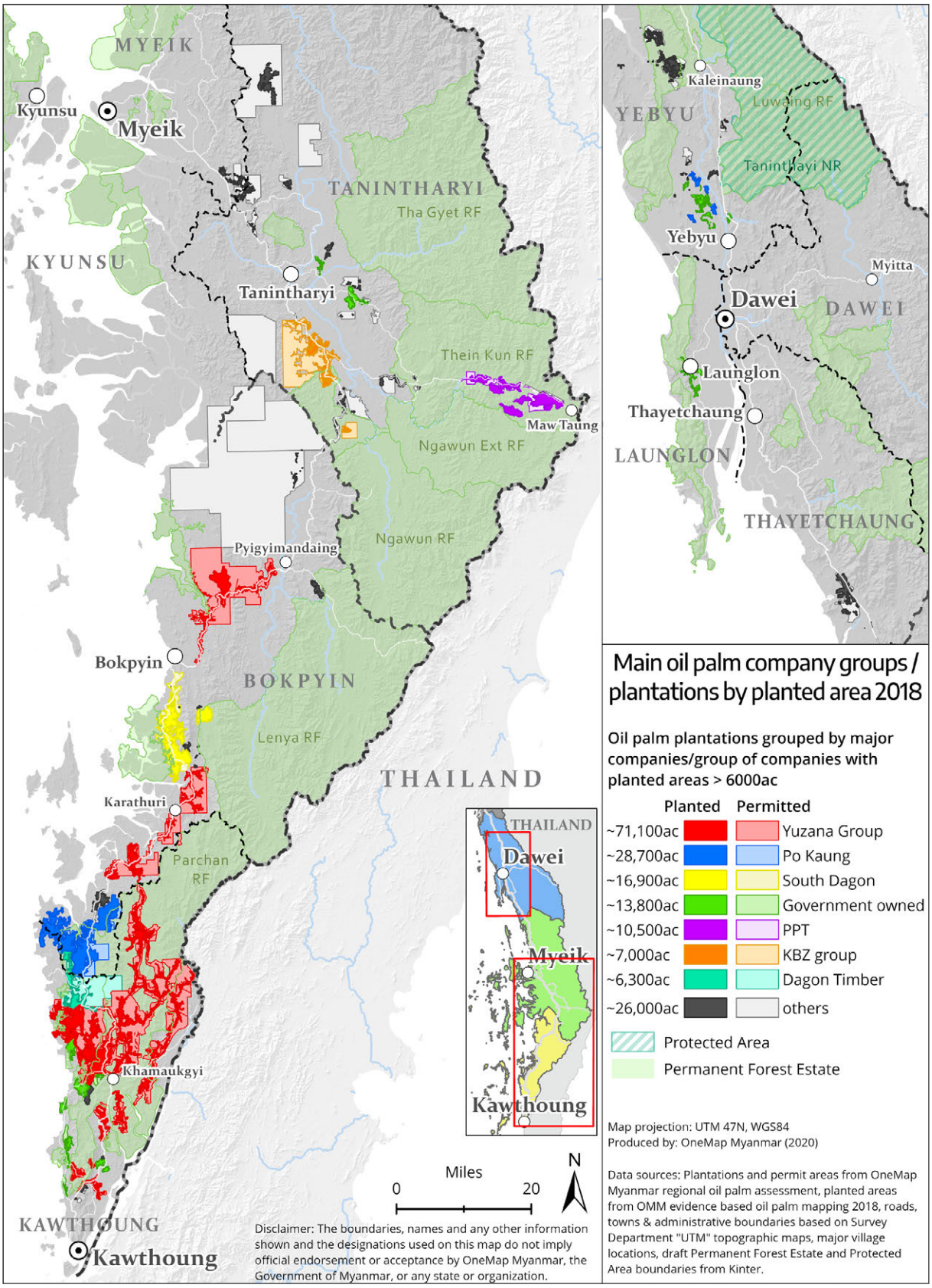
Note: In the case of MIC permits there is a prospecting area and an allowable permitted plantation area. Although the companies have been granted a larger area within which to search apply for land permits, they are not entitled to plant more than the permitted area. For this purpose, we have chosen to display the total allowable permitted plantation area as this is a truer representation of the theoretical plantation size.

Plantings by company (small sized permit area – less than 6,000 acres)

Appendix 4: Planting permit status – Tanintharyi Region



Appendix 5: Map of the 7 main oil palm plantation conglomerates by total planted area



Appendix 6: DoA updated list of Oil Palm plantations 2018/19 budget year

ပူးတွဲဇယား (၃)

၂၀၁၈ - ၂၀၁၉ ခုနှစ်၊ တနင်္သာရီတိုင်းဒေသကြီး၊ ဆီအုန်းကုမ္ပဏီများ၏
စိုက်/ အောင်/ နှုန်း/ အထွက် စာရင်း

စဉ်	ကုမ္ပဏီအမည်	စိုက်ဧက	အသီးခူးဧက	အထွက်နှုန်း (တန်)	အထွက် (တန်)
(က)	မြို့တော်ခရိုင်	၅၉၁၅၄	၉၈၃၅	၂.၇၃	၂၆၈၁၈
၁။	ဗင်းတော့ချ်	၁၁၂၀	၂၅၀	-	-
၂။	အေးရှားဝေါလ်	၁၀၂၀၀	၂၁၅၃	၂.၄၈	၅၃၄၀
၃။	မြန်နိုင်မြင့်	၂၃၀၈	၆၇၀	၀.၁၈	၁၂၀
၄။	ရွှေကမ္ဘောဇ	၉၀၀၅	၃၃၈၂	၀.၉၁	၃၀၃၇
၅။	တက်နေ	၁၄၁၃	-	-	-
၆။	စီကောဘီ	၁၈၇၆	၁၅၀	၀.၇၃	၁၁၀
၇။	ပြည့်ဖြိုးထွန်း	၁၆၉၈၅	၂၂၀၀	၇.၆၄	၁၆၈၂၀
၈။	ရွှေသံလွင်	၁၄၃၈	၁၃၀	၀.၈၉	၁၁၆
၉။	မောင်ဝိတ်မိသားစု	၁၀၂၀	၃၀၀	၀.၁၃	၄၀
၁၀။	ထူးထရေးဒင်း	၂၀၇၅	၂၀၀	၁.၄၅	၂၉၁
၁၁။	မြန်မာအေးဗိုးယား	၇၇၅	-	-	-
၁၂။	သိန်းခွန်းဖွံ့ဖြိုးရေး	၄၀၅	-	-	-
၁၃။	စိမ်းလန်းဌာနေ	၂၉၀	-	-	-
၁၄။	MSPP	၄၂၈၈	၁၀၀	၆.၃၇	၆၃၇
၁၅။	တောင်ပိုင်းရွှေရောင် အလင်းတန်းများ	၆၈၀	-	-	-
၁၆။	Advance Seafood	၃၇၅၆	၃၀၀	၁.၀၂	၃၀၇
၁၇။	စိန်ပြည့်လျှံအောင်	-	-	-	-
၁၈။	ထားဝယ်ကုမ္ပဏီ	၃၀၀	-	-	-
၁၉။	တော်ဝင်ရွှေပုလဲ	-	-	-	-
၂၀။	Atro Agro	၅၀၀	-	-	-
၂၁။	Kyaw Maw- 19	၇၂၀	-	-	
(ခ)	ထားဝယ်ခရိုင်	၁၇၀၀၁	၉၉၅၉	၀.၉၅	၇၅၄၄
၁။	အဏ္ဏဝါစိုးမိုး	၆၀၀၀	၄၅၀၇	၀.၉၂	၄၁၄၇
၂။	စတီးစတုန်း	၂၂၄၇	၅၁၀	-	-
၃။	ပိုကောင်း	၂၀၀၂	၂၀၀၂	-	-
၄။	ရွှေပဒုမ္မာ	၂၁၃	-	-	-
၅။	ဦးပိုင်လီမိတက်	၆၅၃၉	၂၉၄၀	၁.၁၅	၃၃၉၇

ပူးတွဲဇယား (၃)

၂၀၁၈ – ၂၀၁၉ ခုနှစ်၊ တနင်္သာရီတိုင်းဒေသကြီး၊ ဆီအုန်းကုမ္ပဏီများ၏
စိုက်/ အောင်/ နှုန်း/ အထွက်

စဉ်	ကုမ္ပဏီအမည်	စိုက်ဧက	အသီးခူးဧက	အထွက်နှုန်း (တန်)	အထွက် (တန်)
(ဂ)	ကော့သောင်းခရိုင်	၂၉၅၀၁၁	၁၁၀၂၀၁	၄.၀၈	၄၄၉၄၄၇
၁။	ပိုကောင်း	၂၅၉၄၉	၁၂၀၅၀	၅.၉၂	၇၁၄၃၉
၂။	ယုဇန	၁၉၁၃၄၈	၆၇၈၁၁	၃.၅၂	၂၃၈၉၃၈
၃။	အင်္ကာဝါထွန်း	၂၃၁၂၇	၆၅၈၀	၂.၂၀	၁၄၄၆၁
၄။	ရွှေမြေရတနာ	၈၁၀၀	၄၆၀၀	၁.၆၄	၇၅၆၂
၅။	ဒဂုံတင်းဘား	၁၄၅၇၈	၄၀၀၀	၂.၆၃	၁၀၅၀၉
၆။	ရွှေဆီအုန်း	၁၀၃၅	၇၂၀	၁.၀၀	၇၂၂
၇။	စူပါဝမ်း	၇၅၀	၃၀၀	၃.၇၀	၁၁၁၀
၈။	တောင်ဒဂုံ	၁၃၈၆၈	၁၂၀၀၀	၈.၃၇	၁၀၀၄၈၀
၉။	အောင်ဇင်မာ	၅၆၉၀	၂၁၀၀	၁.၈၈	၃၉၄၈
၁၀။	အောင်ရည်ဖြိုး	၂၀၀	-	-	-
၁၁။	အမ်းစထရောင်း	၃၇၅	၄၀	၆.၉၅	၂၇၈
၁၂။	ရွှေအဟုန်	၄၀၀	-	-	-
၁၃။	မြန်မာနိုင်	-	-	-	-
၁၄။	ကမ်းရိုးတန်းဖွံ့ဖြိုးရေး	၂၂၄၇	-	-	-
၁၅။	တော်ဝင်ရွှေပုလဲ	၅၉၃	-	-	-
၁၆။	MRPP	၁၅၀	-	-	-
၁၇။	မြန်မာသြဘာ	-	-	-	-
၁၈။	တောင်ပိုင်းရွှေရောင်အလင်းတန်း	-	-	-	-
၁၉။	Auto Electronic Grop	၆၅၉၁	-	-	-
၂၀။	အဲဗားဂရင်း	-	-	-	-
	ကုမ္ပဏီစုစုပေါင်း	၃၇၁၁၅၆	၁၂၉၉၉၅	၃.၇၂	၄၈၃၈၀၉
	နိုင်ငံပိုင်	၁၇၃၄၀	၁၁၅၁၅	၁.၄၁	၄၆၇၀
	တပ်ရင်း/ ဖွဲ့စုစုပေါင်း	၂၂၇၆	၅၂၈	၃.၀၈	၁၆၂၅
	ခြံငယ်ရှင်	၉၉၁၁	၃၁၂၂	၁.၃၆	၄၂၅၉
	စုစုပေါင်း	၄၀၀၆၈၃	၁၄၅၁၆၀	၃.၄၁	၄၉၄၃၆၃

OneMap
MYANMAR